This document is scheduled to be published in the
Federal Register on 06/14/2023 and available online at
federalregister.gov/d/2023-11497, and on govinfo.gov

E 4910-13-P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 1, 43, 60, 61, 91, 97, 111, 135, 136, 141, 142, and 194

[Docket No. FAA-2023-1275; Notice No. 23-8]

RIN 2120–AL72

Integration of Powered-Lift: Pilot Certification and Operations; Miscellaneous Amendments Related to Rotorcraft and Airplanes

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: This action proposes a Special Federal Aviation Regulation for alternate eligibility requirements to safely certificate initial groups of powered-lift pilots, as well as determine which operating rules apply to powered-lift on a temporary basis to enable the FAA to gather additional information and determine the most appropriate permanent rulemaking path for these aircraft. Powered-lift will be type certificated as special class aircraft under the existing regulations. Currently, there is not an established path for civilian pilots to be certificated with a powered-lift category rating. The general and commercial operating regulations do not contemplate operation of powered-lift. In addition to proposed changes for powered-lift, this action also proposes changes that would affect practical tests in aircraft that require type ratings, including airplanes and helicopters, training center rotorcraft instructor eligibility, training, and testing requirements, and training center use of rotorcraft in flight instruction.

DATES: Send comments on or before [**INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**].

ADDRESSES: Send comments identified by docket number FAA-2023-1275 using any of the following methods:

Federal eRulemaking Portal: Go to https://www.regulations.gov/ and follow the online instructions for sending your comments electronically.

Mail: Send comments to Docket Operations, M-30; U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, S.E., Room W12-140, West Building Ground Floor, Washington, D.C. 20590-0001.

Hand Delivery or Courier: Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, S.E., Washington, D.C., between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

Fax: Fax comments to Docket Operations at (202) 493-2251.

Docket: Background documents or comments received may be read at https://www.regulations.gov/ at any time. Follow the online instructions for accessing the docket or go to the Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, S.E., Washington, D.C., between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Christina Grabill, AFS-810, Federal Aviation Administration, 800 Independence Ave, S.W., Washington, DC 20591; telephone (202) 267-1110; email christina.grabill@faa.gov.

SUPPLEMENTARY INFORMATION:

Table of Contents

I. Executive Summary
- A. Aircraft Certification
- B. Airman Certification
- C. Operational Requirements
- D. International Operation of Powered-Lift
- E. Summary of the Costs and Benefits
- F. SFAR Framework and Duration

II. Authority for this Proposed Rulemaking
III. Background
A. General
B. Related Rulemakings
C. Part 1 Considerations
IV. Powered-Lift Type Certification and FSTD Qualification
A. Type Certification
B. Noise Considerations
C. Qualification of Powered-Lift Flight Simulation Training Devices (FSTD)
V. Certification of Powered-Lift Pilots
A. Establish a Type Rating Requirement for Persons Seeking to Act as PIC of Powered-Lift
B. Applicability of the Type Rating Requirement to Military Pilots
C. Applicability of the SIC Qualification Requirements of § 61.55 to Powered-Lift
D. Supervised Operating Experience Requirements of § 61.64
E. Establish an Alternate Pathway for Pilot Certification
F. Training in an Approved Program under Parts 135, 141, and 142
G. Practical Tests
H. Miscellaneous Amendments
I. Part 135 Pilot Qualifications
J. Part 142 Training Centers
K. Subpart K of Part 91 Pilot Qualifications
L. Summary of Proposed Regulatory Changes for Airmen
VI. Operational Rules for Powered-Lift
A. Introduction
B. Part 91 Rules for Powered-Lift
C. Part 97 Rules for Powered-Lift
D. Part 135 Rules for Powered-Lift
E. Part 136 Rules for Powered-Lift
F. Part 43 Applicability to Powered-Lift
G. Pilot Records Database
VII. Air Traffic Operations
VIII. International Operations for Powered-Lift
A. Personnel Licensing
B. Operations of Aircraft
C. Airworthiness of Aircraft
IX. Regulatory Notices and Analyses
A. Data and Assumptions
B. Summary of the Regulatory Impact Analysis
C. Regulatory Flexibility Act
D. International Trade Impact Assessment
E. Unfunded Mandates Assessment
F. Paperwork Reduction Act
G. International Compatibility
H. Environmental Analysis
I. Regulations Affecting Intrastate Aviation in Alaska
X. Executive Order Determinations
A. Executive Order 14036, Promoting Competition in the United States Economy
B. Executive Order 13985, Advancing Racial Equity and Support for Underserved Communities Through the Federal Government

C. Executive Order 13132, Federalism
D. Executive Order 13175, Consultation and Coordination with Indian Tribal Governments
E. Executive Order 13211, Regulations that Significantly Affect Energy Supply, Distribution, or Use
F. Executive Order 13609, Promoting International Regulatory Cooperation

XI. Additional Information
A. Comments Invited
B. Confidential Business Information
C. Electronic Access and Filing
D. Small Business Regulatory Enforcement Fairness Act

Abbreviations and Acronyms used in this Document

ACO – Aircraft Certification Office
ACS – Airman Certification Standards
ALPA – Air Line Pilots Association
APD – Aircrew Program Designee
AIH – Aviation Instructor's Handbook
AQP – Advanced Qualification Program
ATC – Air Traffic Control
ATP – Airline Transport Pilot
ATO – Air Traffic Organization
CAMP – Continuous Airworthiness Maintenance Program
CFIT – Controlled Flight Into Terrain
CFR – Code of Federal Regulations
CLOA – Certificate and Letter of Authority
CVR – Cockpit Voice Recorder
DPE – Designated Pilot Examiner
GPS – Global Positioning System
GPWS – Ground Proximity Warning Systems
ELT – Emergency Locator Transmitter
ERT – Extended Review Team
FDR – Flight Data Recorder
FFS – Full Flight Simulator
FSB – Flight Standardization Board
FSBR – Flight Standardization Board Report
FSTD – Flight Simulation Training Device
FTD – Flight Training Device
HAA – Helicopter Air Ambulance
HTAWS – Helicopter Terrain Awareness Warning System
ICAO – International Civil Aviation Organization
IFR – Instrument Flight Rules
IMC – Instrument Meteorological Conditions
IOE – Initial Operating Experience
IPC – Instrument Proficiency Check
LOA – Letter of Authorization
MDA – Minimum Descent Altitude
MCTW – Maximum Certificated Takeoff Weight
MEL – Minimum Equipment List
MFD – Multifunction Display

MGTOW – Maximum Gross Takeoff Weight
MMEL – Master Minimum Equipment List
NAS – National Airspace System
NPRM – Notice of Proposed Rulemaking
NM – Nautical Mile
NSP – National Simulator Program
NTSB – National Transportation Safety Board
OEM – Original Equipment Manufacturer
PA – Public Address System
PDP – Professional Development Program
PIC – Pilot in Command
PFD – Primary Flight Display
POI – Principal Operations Inspector
PTS – Practical Test Standards
QPS – Qualification Performance Standards
RPA – Rules of Particular Applicability
SARPs – Standards and Recommended Practices
SFAR – Special Federal Aviation Regulation
SIC – Second in Command
SOE – Supervised Operating Experience
SVO – Simplified Vehicle Operations
TAPL – Technically Advanced Powered-Lift
TAWS – Terrain Awareness and Warning System
TC – Type Certificate
TCE – Training Center Evaluator
TCDS – Type Certificate Data Sheet
VFR – Visual Flight Rules
VMC – Visual Meteorological Conditions
VTOL – Vertical Takeoff and Landing

I. Executive Summary

This proposed rule would establish the requirements for pilot certification and operation of powered-lift. Powered-lift are defined in title 14 of the Code of Federal Regulations (14 CFR) part 1 as heavier-than-air aircraft capable of vertical takeoff, vertical landing, and low speed flight that depends principally on engine-driven lift devices or engine thrust for lift during these flight regimes and on nonrotating airfoil(s) for lift during horizontal flight. Powered-lift are capable of vertical takeoff and landing (VTOL) while being able to fly like an airplane during cruise flight. Currently, there are

no type-certificated powered-lift in civil operations; however, there are several applicants seeking type certificates for such aircraft.[1]

Several of the powered-lift that the FAA expects to come to the civilian market have complex and unique design, flight, and handling characteristics with varying degrees of automation. The FAA anticipates that these aircraft will conduct an array of different operations such as transporting crew and material to offshore oil rigs, transporting passengers from point-to-point as an air ambulance, and transporting passengers in concentrated urban environments as an air taxi.

To safely integrate powered-lift in the national airspace system (NAS), the FAA proposes to make permanent changes to parts 61, 135, and 142 to train and certificate powered-lift pilots and instructors, as well as temporary changes through a Special Federal Aviation Regulation (SFAR) that would supplement existing rules, create temporary alternatives for airman certification, remove operational barriers, and mitigate safety risks for powered-lift. As discussed in section I.F, the FAA proposes a duration of 10 years for the SFAR.

Powered-lift will also be utilized to support the deployment of advanced air mobility (AAM) operations. AAM is an umbrella term for an air transportation system that moves people and cargo using revolutionary new aircraft. These aircraft are often referred to as air taxis or electric Vertical Takeoff and Landing (eVTOL) aircraft. Congress has recently directed the Department of Transportation to establish an advanced air mobility working group to plan for and coordinate efforts to integrate advanced air mobility aircraft into the national airspace system through the Advanced Air Mobility

---

[1] The General Aviation Manufacturers Association (GAMA) made several contacts with the FAA during the course of this rulemaking. On July 21, 2022, the General Aviation Manufacturers Association submitted a letter to the FAA providing its recommendations regarding consensus standards for powered-lift. The FAA did not take these recommendations into consideration while developing this NPRM. The FAA has placed a copy of this letter in the docket for this rulemaking. On August 17, 2022, the FAA met with GAMA to discuss eVTOL Entry Into Service. The FAA did not take into account the contents of this meeting while developing this NPRM.

Coordination and Leadership Act.[2] This rulemaking is an important step in facilitating the integration of powered lift and AAM into the NAS. As discussed further in section X of this preamble, the proposed rule would promote competition and equity in air travel by enabling powered-lift and AAM to enter the market.

A. Aircraft Certification

The FAA is not proposing to establish any new requirements for the type certification of powered-lift, nor is it proposing to revise existing type certification requirements. The FAA has determined that existing aircraft certification requirements are sufficient to type certificate powered-lift as a special class under 14 CFR 21.17(b).

The special class process allows the FAA to address the novel features of unique and nonconventional aircraft without the need for additional processes such as special conditions or exemptions that would be required if the FAA used the airworthiness standards already in place. Under the special class process, the FAA designates applicable airworthiness requirements as the certification basis for each aircraft design, including its engines and propellers. This designation of applicable airworthiness requirements may include requirements from the existing airworthiness standards applicable to normal category and transport category airplanes, normal category and transport category rotorcraft, aircraft engines and propellers (parts 23, 25, 27, 29, 33, and 35), and it may also include unique airworthiness criteria developed specifically for the individual product.

The FAA will publish the proposed airworthiness criteria, along with an explanation of its equivalency determination, in the *Federal Register* for public notice and comment for each powered-lift project.

[2] Pub. L. 117-203, 136 Stat. 4441.

The aircraft certification requirements are discussed in more detail in section IV of this preamble.

B. Airman Certification

Although the FAA has existing regulations in part 61 for training and certificating powered-lift flight instructors and pilots, those regulations do not adequately address the unique challenges of introducing a new category of aircraft to civil operations. First, the existing regulations did not anticipate the diversity in design of the powered-lift that are beginning to work through the aircraft certification process. Second, the existing aeronautical experience requirements for powered-lift contain roadblocks for training and certificating the initial cadre of powered-lift flight instructors and pilots. In addition to the challenges with the existing regulations in part 61, the regulations for certain commercial operations in part 135 do not contain specific regulations addressing qualifications for powered-lift pilots which creates a safety gap when compared to the part 135 requirements for pilots of airplanes and helicopters.

The intention expressed by industry to introduce these aircraft immediately into passenger-carrying commercial operations has made more urgent the need to reconsider the existing airman regulations for powered-lift and address the absence of specific regulations for pilots in part 135. The FAA requires and the public expects that commercial operations be conducted with the highest regard for safety and by pilots who have extensive experience flying the particular category of aircraft in which paying passengers will be transported. To maintain a level of safety commensurate with that expected for airplanes and helicopters, the FAA is proposing new requirements for pilots to hold type ratings for each powered-lift they fly and proposing qualification requirements for powered-lift pilots serving in part 135. To address the obstacles to airman certification in existing regulations, the FAA is proposing alternatives to certain

requirements in part 61 to facilitate the training and certification of the initial cadre of powered-lift instructors and powered-lift pilots.

1. Type Rating

The lack of commonality in the design of powered-lift creates challenges for pilot training and certification. The powered-lift coming to the civilian market have complex and unique design, flight, and handling characteristics with varying degrees of automation. Because each powered-lift can have different configurations, unique inceptors, diversified flight controls, and complicated and distinctive operating characteristics, the FAA has determined that, unlike airplanes and rotorcraft, it is not feasible to establish classes within the powered-lift category at this time. As such, the FAA is proposing to require pilots to hold a type rating for each powered-lift they fly.[3] This proposal would ensure that the pilot in command (PIC) has received specific training on the unique aspects of each powered-lift and demonstrated proficiency during a practical test conducted by an FAA examiner. The proposed type rating requirement would also conform to the type rating standard established by the International Civil Aviation Organization (ICAO).

2. Flight Instructors

Flight instructors form the backbone of the airman certification framework. Every individual that learns to fly begins by obtaining flight training from an authorized instructor on the basic maneuvers, flight controls, and instruments of a particular category of aircraft (e.g., airplanes). The FAA recognizes that, once the first powered-lift achieve type certification, there will be an insufficient number of qualified flight instructors to provide training to the pilots who will need to obtain certificates and ratings necessary to

[3] If a manufacturer develops a powered-lift that is sufficiently similar to another powered-lift such that there is enough commonality in how they perform and handle for pilots (e.g., flight controls), it is possible for those powered-lift to share a type rating. Based on what is being manufactured now, the FAA does not expect this to be a possibility in the near term. Should this realize, the FAA would determine whether a powered-lift should share a type rating with another powered-lift during the FSB process, which is discussed in section V.H of this preamble.

serve in powered-lift operations. For this reason, the FAA is proposing to allow certain pilots employed by the manufacturer to obtain the necessary training and experience for powered-lift through the test flights and crew training activities necessary for aircraft certification. Once the manufacturer's personnel obtain the necessary ratings, they would form the initial cadre of instructors who could conduct certification training in the manufacturer's aircraft for certain instructor personnel at part 141 pilot schools, part 142 training centers, and part 135 operators. These instructors under parts 141, 142, and 135 would then develop the curricula for the initial powered-lift training at their respective organizations.

The reliance on manufacturers to provide the initial training in a new aircraft is not without precedent in aviation. For years, manufacturers of new types of airplanes or rotorcraft have provided the necessary training for the initial cadre of pilots who will fly the new aircraft type (e.g., B-787). In fact, a number of manufacturers hold air agency certificates under parts 141 and 142 for the purpose of providing this type of flight training to the pilots of prospective customers. As explained in greater detail later in this preamble, the current proposal provides flexibility for powered-lift manufacturers to conduct training that would facilitate the qualification of flight instructors and promote the use of their aircraft.

3. Pilots

Even with sufficient qualified flight instructors, the existing airman certification rules for powered-lift present obstacles for persons seeking to accomplish the training and experience necessary to obtain the certificates and ratings for commercial operations. In response to industry concerns, the FAA is proposing alternate requirements for meeting pilot in command (PIC) flight time and cross-country flight time requirements in part 61 and expanding the opportunity for pilots to obtain powered-lift ratings at the commercial pilot certificate level through part 135 training programs. Most of the alternative

requirements would be available only to pilots who already hold a commercial pilot certificate and an instrument rating for another category of aircraft. In addition, although no FSTDs representing powered-lift are currently qualified, the FAA anticipates near-term qualification of such devices and is proposing to allow increased flight training opportunities through simulation.

4. Part 135 Pilot Qualifications

With the recent issuance of a separate NPRM that proposes to enable powered-lift operations in part 135, the FAA is proposing permanent changes in this NPRM to training and qualification requirements for pilots to align with the requirements established for pilots of airplanes and rotorcraft in part 135. These proposals include ATP certification and operating experience in make and model of powered-lift for PICs in commuter operations, part 121 training requirements for pilots who serve in commuter operations in certain powered-lift, and instrument ratings for all powered-lift pilots in part 135 operations. In addition to proposing to allow a part 135 operator to develop and provide training for powered-lift pilot certification at the commercial pilot level, the FAA is proposing to permit successful completion of part 135 pilot checks to be used to meet the practical test requirements for powered-lift ratings subject to certain conditions.

5. Dual Controls

Since 1938, aviation regulations have required aircraft to have dual controls for operations involving flight training. This requirement prevents a person not rated or inexperienced in an aircraft from having sole responsibility for the flight and permits a PIC to directly intervene when necessary in the interest of safety. The FAA is aware that some manufacturers have or intend to design powered-lift with a single set of controls. Because the FAA is proposing that all powered-lift would require the pilot to hold a type rating for the aircraft, a person would be required to receive training for a type rating in the specific powered-lift for the type rating sought, meaning the powered-lift must have a

dual set of controls for flight training under § 91.109. To the extent that manufacturers have suggested that there are alternate safe means to conduct flight training without a dual set of controls, the FAA finds that those means have not been demonstrated or validated to a level that would allow the FAA to propose relief from the requirement to conduct flight training with a dual set of controls. The FAA invites public comments on this determination. Specifically:

- How would a flight instructor provide flight training in powered-lift with only a single set of flight controls without adversely affecting safety?
- How would an applicant meet the supervised operating experience requirements with a single set of flight controls in powered-lift?[4]
- How would an operator fully qualify pilots for air carrier operations in an aircraft without dual flight controls while meeting the enhanced safety standard that is expected of air carrier operations?

Please provide any relevant data or technical analyses that could assist the FAA in evaluating these comments.

6. Impacts to Rotorcraft Training at Part 142 Training Centers

The FAA is also proposing some permanent changes that, in addition to establishing requirements for powered-lift, would affect certain part 142 training in FSTDs that represent rotorcraft. These proposed changes would harmonize requirements for airplanes, powered-lift and rotorcraft in part 142 with regard to training in an FSTD that represents an aircraft that requires the pilot to hold a type rating. In some instances, these proposed changes would provide additional flexibility to training and qualification

[4] A person subject to a supervised operating experience (SOE) limitation my not act as PIC of an aircraft but must perform the duties of PIC under the supervision of a qualified PIC. The FAA considers a person to be performing the duties of a PIC when the person performs all the functions of the PIC including landings and takeoffs, en route flying, low approaches, and ground functions. See Legal Interpretation to Duncan (Apr. 13, 2012). As such, both the PIC (the person responsible for the safe conduct of the flight) and the person completing SOE need access to flight controls.

for rotorcraft instructors consistent with allowances for airplane instructors and provide training and testing for rotorcraft instructors that is more specifically focused on rotorcraft, instead of airplanes.

C. Operational Requirements

Currently, parts 43 (Maintenance, Preventive Maintenance, Rebuilding, and Alteration), 91 (General Operating and Flight Rules), 97 (Standard Instrument Procedures), 135 (Operating Requirements: Commuter and on Demand Operations and Rules Governing Persons on Board Such Aircraft), and 136 (Commercial Air tours and National Parks Air Tour Management) include regulatory requirements applicable to aircraft, generally, and do not specify applicability to a particular kind of aircraft (i.e., airplane, rotorcraft, powered-lift). Accordingly, these provisions currently apply to powered-lift.

In order to mitigate the safety gaps that exist due to the absence of operational regulations specifically applicable to powered-lift, the FAA proposes, through the SFAR, to apply specific airplane, rotorcraft, and helicopter rules contained in parts 43, 91, 97, 135, and 136 to powered-lift as appropriate. The FAA conducted a comprehensive review of the operational rules, taking into consideration the anticipated capabilities of powered-lift and the lack of operational data. Each rule was evaluated to determine whether the airplane or the rotorcraft/helicopter provisions would maintain a level of safety for powered-lift operations as is provided in the current rules. Based on this review, the FAA asserts that the proposed provisions will maintain an equivalent level of safety for operations conducted in powered-lift to those conducted in airplanes, rotorcraft, or helicopters.

Specifically, under part 91, the FAA proposes applying airplane rules, except for the helicopter provisions of §§ 91.126(b)(2) and 91.129(f)(2), when a powered-lift is operating in vertical-lift flight mode. These two regulations require helicopters, when

conducting approaches, to avoid the flow of fixed-wing aircraft in Class G and Class D airspace, respectively. This proposal would provide the flexibility for powered-lift operators capable of landing vertically to land at most helicopter pads and heliports.[5]

Under part 135, the FAA proposes applying airplane rules, except for helicopter- or rotorcraft-specific regulations that outline: certain equipment requirements; certain emergency equipment and passenger briefing requirements for overwater operations; certain VFR or IFR requirements; requirements for operations in icing conditions; and certain airport requirements, as well as requirements for operating in remote areas. The FAA also proposes to require powered-lift operators conducting operations similar to helicopter air ambulance operations to utilize the requirements applicable to such operations in part 135. The FAA also proposes to make a permanent change to the regulatory requirements for the Pilot Records Database contained in part 111 to include powered-lift as a qualifying aircraft to meet the threshold requirement of whether a person operating in furtherance of a business needs to report pilot records to the Pilot Records Database.

In general, the FAA applies operational requirements specific to helicopter operations within part 136 to powered-lift operations because the FAA expects powered-lift will hover and operate similarly to helicopters when conducting air tours, except when relying on horizontal lift. Accordingly, for operational requirements related to cruise flight in wing-borne flight mode, the FAA applies airplane specific requirements because of a powered-lift's expected similarity to an airplane in that operational circumstance.

The FAA also proposes to allow powered-lift operators to use Copter Procedures as defined in part 97 if the aircraft has been type-certificated and equipped to utilize those

---

[5] See section VI.A.1 for further discussion of "heliport" and the FAA's published interim guidance for vertiport design.

procedures. That capability will be identified in the limitations section of the aircraft flight manual along with any other specific limitations and procedures necessary for safe operation of the aircraft.

For purposes of maintenance, preventive maintenance, rebuilding, and alteration, the FAA proposes to apply the current requirements under part 43, with only two modifications. First, the FAA proposes to apply the preventive maintenance requirements available to certificate holders operating rotorcraft under part 135 in remote areas, to certificate holders operating powered-lift under part 135 in remote areas. If approved by the Administrator, a certificate holder operating powered lift under part 135 would be permitted to allow a pilot who has completed training to perform certain specific preventive maintenance items.[6] Second, the FAA proposes that in lieu of complying with § 43.15(b), each person performing an inspection required by part 91 on a powered-lift, must inspect "critical parts" in accordance with the maintenance manual or Instruction for Continuous Airworthiness, or as otherwise approved by the Administrator. The FAA proposes that "critical part" have the same meaning as provided in §§ 27.602 and 29.602.

The operational requirements for powered-lift are discussed in more detail in section VI of this preamble.

D. International Operation of Powered-Lift

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to conform to International Civil Aviation Organization (ICAO) Standards and Recommended Practices (SARPs) to the maximum extent practicable.

The FAA proposes to amend part 61 to require powered-lift pilots to have a type rating, which meets the standards outlined in ICAO Annex 1, Personnel Licensing. Under

[6] The pilot must complete training under an approved training program. 14 CFR 43.3(h)(2).

parts 91 and 135, the FAA requires U.S. operators to comply with ICAO Annex 2, Rules of the Air. ICAO Annex 8, Airworthiness of Aircraft, is silent on powered-lift; however, the FAA designates powered-lift as special class aircraft for type certification in accordance with § 21.17(b) and applies airworthiness criteria that meet an equivalent level of safety to the FAA's existing airworthiness standards and are consistent with the intent of ICAO Annex 8 to the Chicago Convention. Accordingly, U.S. operators of powered-lift that are type-certificated with a standard airworthiness certificate and conduct their operations in accordance with the standards outlined in Annex 2 would be eligible to operate over the high seas.

The requirements for the international operation of powered-lift are discussed in more detail in section VIII of this preamble.

E. Summary of the Costs and Benefits

Operations with powered-lift are anticipated to offer benefits over traditional airplanes and rotorcraft. A report published by the U.S. Government Accountability Office (GAO) stated that many of these newer category of aircraft could be easier to design, simpler to construct, less complicated to maneuver, quieter to fly, and more economical to operate compared to traditional aircraft.[7] Many use cases for these aircraft are envisioned, and this rulemaking is a step toward those use cases coming to realization.

While operators choosing to conduct operations with powered-lift would incur costs to comply with regulations proposed in this NPRM, these costs would be on a scale equivalent to those incurred by operators choosing to conduct operations with airplanes or rotorcraft under similar regulations. Likewise, costs imposed on individuals that choose to accomplish the required training and testing required to hold an airman

[7] Transforming Aviation: Stakeholders Identified Issues to Address for 'Advanced Air Mobility' | U.S. GAO.

certificate with a type rating in the powered-lift category would be on a scale equivalent to those incurred by individuals accomplishing training and testing to hold an airman certificate with a type rating in the airplane or rotorcraft category. In other words, the costs imposed on operators and individuals that choose to comply with regulations proposed by this rule would be no more burdensome than the costs incurred by entities and individuals complying with corresponding airplane and rotorcraft regulations that are already in effect.

However, to address the significant operational differences between each powered-lift, the FAA is proposing to require the PIC of a powered-lift to hold a type rating for the aircraft. The FAA has determined that requiring persons to hold type ratings for powered-lift would establish the appropriate level of safety, greater than would be established by only holding a powered-lift category rating, by ensuring persons receive adequate training and are tested on the unique design and operating characteristics of each powered-lift.[8]

The proposals in this NPRM can generally be grouped by those rules affecting airman certification and those rules enabling powered-lift to conduct operations under parts 91, 97, 135, and 136. For certification of airmen with a type rating in powered-lift, the FAA proposes alternative aeronautical experience and logging requirements. For the operational rules, the FAA proposes to apply specific airplane, rotorcraft, or helicopter rules to powered-lift, as appropriate. The FAA performed an analysis of each proposal in this NPRM and its impact. An overview of this analysis is included in the Regulatory Evaluation portion of this preamble. A regulatory impact analysis has also been prepared for this NPRM and can be found in the docket for this proposed rule.

---

[8] Official FAA forecasts related to the operation of powered-lift in the NAS have yet to be developed. Thus, a forecast for the number of pilots expected to conduct operations under part 135 or 91 was prepared solely to estimate costs imposed by this proposed SFAR. These costs include adding a type rating for powered-lift to an airman certificate. At this time, forecasts do not include an estimate for individuals seeking to operate powered-lift for personal use. Forecasts were developed using publicly available data related to orders and options for powered-lift.

The following table presents a summary of the primary estimates of the quantified costs of this rule, as well as estimates for a pessimistic and optimistic scenario. This analysis provides a range of costs from low to high based on these scenarios. The FAA considers the primary estimate of costs to be the base scenario. For the primary estimate, over a 10-year period of analysis this rule would result in present value costs of about $30.5 million at a three percent discount rate with annualized net costs of about $3.6 million. At a seven percent discount rate, the present value net costs are about $24.1 million with annualized net costs of $3.4 million.

Additional details are provided in the Regulatory Evaluation section of this proposed rule and in the Regulatory Impact Analysis available in the docket for this rulemaking.

Table 1: Quantified Costs of NPRM (Millions $)*

Forecast Scenario	10-Year Present Value (3%)	Annualized (3%)	10-Year Present Value (7%)	Annualized (7%)
Base - Primary Estimate	$30.5	$3.6	$24.1	$3.4
Pessimistic	$27.4	$3.2	$21.0	$3.0
Optimistic	$33.7	$4.0	$27.3	$3.9

*Table notes: Columns may not sum to total due to rounding. Estimates are provided at three and seven percent discount rates per Office of Management and Budget (OMB) guidance.

F. SFAR Framework and Duration

The NPRM will enable powered-lift operations on a temporary basis and provide the FAA an opportunity to assess the operations and establish a comprehensive regulatory scheme.

In the past, when the FAA has found that it lacks sufficient experience regarding new operations, the use of an SFAR has been an effective way to gain such experience while enabling some degree of limited operations. Such SFARs have typically temporarily enacted conservative safety approaches to enabling operations, allowing both

the FAA and industry to observe those operations and then subsequently make safety improvements in a later permanent change to the regulations. An example of this approach exists within the FAA's SFAR No. 29, which dealt with instrument helicopter operations.

In considering this approach, the FAA recognizes that several limited permanent changes will need to be made to various regulations to enable a more comprehensive SFAR covering powered-lift. This NPRM proposes both limited permanent changes and an SFAR to facilitate powered-lift operations and permit the FAA to gather data and better understand what a comprehensive permanent regulatory framework should look like.

Because the SFAR will affect several parts of 14 CFR, the FAA has determined that the most clear and comprehensive regulatory approach is through the creation of a new part to wholly contain the proposed SFAR. Specifically, the FAA proposes to add a new part 194, titled "Special Federal Aviation Regulation No. 120 – Powered Lift: Pilot Certification and Training; Operations Requirements," to 14 CFR under new subchapter L, titled "Other Special Federal Aviation Regulations." New part 194 would utilize the traditional regulatory structure to supplement existing rules, create temporary alternatives for airman certification, remove operational barriers, and mitigate safety risks for powered-lift. As a result, requisite applicability revisions are proposed to parts 43, 60, 61, 91, 97, 111, 135, 136, 141, and 142 to clearly communicate that current regulations are intended to operate in tandem with proposed part 194, as subsequently discussed in this preamble. The FAA considers this approach to be consistent with previous rulemakings where, at initial inception, rotorcraft and helicopter regulations had similar requirements to the airplane rules. Helicopters were given relief or granted other minimums unique to their operation after an evaluation period provided by an SFAR.

The FAA is proposing that the SFAR be in effect for ten years after finalization of this proposed rulemaking. In selecting ten years as the appropriate duration for this SFAR, the FAA considered a number of factors including the time it will take to initiate operations after the adoption of this notice of proposed rulemaking (NPRM) as a final rule, considering the type certification status of the powered-lift that are commercially viable. After operators initiate commercially viable operations, the FAA also considered the appropriate length of time to collect operational data, and then complete a subsequent rulemaking to implement permanent amendments.

II. Authority for this Proposed Rulemaking

The FAA's authority to issue rules on aviation safety is found in Title 49 of the United States Code. Subtitle I, Section 106 describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the FAA's authority.

The FAA is issuing this proposal under the authority described in Subtitle VII, Part A, Subpart i, Section 40113, Administrative, and Subpart iii, Section 44701, General Requirements; Section 44702, Issuance of Certificates; Section 44703, Airman Certificates; Section 44704, Type Certificates, Production Certificates, Airworthiness Certificates, and Design and Production Organization Certificates; Section 44705, Air Carrier Operating Certificates; and Section 44707, Examination and Rating of Air Agencies. Under these sections, the FAA prescribes regulations and minimum standards for practices, methods, and procedures necessary for safety in air commerce, including the authority to examine and rate civil schools and prescribe regulations to ensure the competency of instructors. The FAA is also authorized under these sections to issue certificates, including airman certificates, type certificates, and air carrier operating certificates, in the interest of safety.

This rulemaking is also proposed under the authority described in Subtitle VII, Part A, Subpart iii, Section 44712, Emergency Locator Transmitters; Section 44713, Inspection and Maintenance; 44715, Noise and Sonic Boom; 44716, Collision Avoidance Systems; and 44722, Winter conditions. These sections direct the Administrator to prescribe regulations to govern the use of emergency locator transmitters and collision avoidance systems, the standards for inspecting and performing maintenance on aircraft, and regulations to control aircraft noise and safety risks related to winter conditions, respectively.

This proposed rulemaking is issued under the authority described in each of the previously discussed sections of Title 49 of the United States Code.

III. **Background**

A. General

Powered-lift are unique in their ability to take off and land vertically like helicopters, and fly like an airplane during cruise flight. They can operate in different flight regimes utilizing features of helicopters or airplanes or both. The flight controls for such aircraft are also often unique to the individual aircraft design and can incorporate both traditional helicopter and airplane controls, or control systems that are dissimilar to either helicopters or airplanes. Likewise, the flight characteristics for powered-lift vary depending on the aircraft design and the different modes in which they operate.

The FAA began to contemplate the integration of powered-lift into the regulations in the 1990s. Specifically, in 1995, the FAA published an NPRM titled "Pilot, Flight Instructor, Ground Instructor, and Pilot School Certification Rules."[9] The NPRM was drafted in anticipation of industry developing powered-lift to subsequently enter the

[9] Pilot, Flight Instructor, Ground Instructor, and Pilot School Certificate Rules; NPRM, 60 FR 41160, 41165 (Aug. 11, 1995).

civilian market. The FAA noted that powered-lift would require new pilot skills and abilities because the aircraft have VTOL capabilities but fly like airplanes at higher altitudes and airspeeds.

At that time, the FAA considered various approaches to pilot certification for powered-lift, including whether powered-lift should be a separate aircraft category or whether a powered-lift class rating should be created within the rotorcraft category. The FAA also considered powered-lift class ratings, such as tilt-rotor, tilt-wing, ducted fan, and vectored thrust; and whether to require a type rating for every make and model of powered-lift. Ultimately, the FAA proposed adding a new powered-lift airman certification category of aircraft without associated class or type ratings.[10]

Some commenters objected, stating that a proposal to add powered-lift as an aircraft category was premature because there were no powered-lift on the market and no evidence that powered-lift would find applications in the civil marketplace. Commenters also noted that the FAA was not proposing operating rules to accompany the pilot certification standards. The FAA published the final rule on April 4, 1997,[11] and introduced the powered-lift category into the airmen certification rules and various other parts of the regulations. In response to commenter concerns, the FAA reasoned that the regulations were necessary because the existing pilot certification standards did not adequately reflect the powered-lift certification requirements and were not drafted with the intent of certificating powered-lift pilots.[12] The FAA emphasized that its regulations must evolve to accommodate advancements in aviation technology and considered the introduction of powered-lift as an aircraft category to be a necessary first step in building a regulatory framework for powered-lift.

---

[10] Pilot, Flight Instructor, Ground Instructor, and Pilot School Certification Rules, NPRM 60 FR 41160, 41165 (Aug. 11, 1995).
[11] Flight Instructor, Ground Instructor, and Pilot School Certification Rules; Final Rule, 62 FR 16220, 16231 (Apr. 4, 1997).
[12] Id.

Following the publication of the final rule, the FAA intended to update the operating rules. However, operational rulemaking initiatives never came to fruition because the market evolved differently than the FAA had envisioned and powered-lift did not enter the civilian market as quickly as the FAA anticipated. The FAA notes that in the years since the pilot certification rules were revised to include powered-lift in 1997, industry has developed new aircraft varying widely in complexity of operation. The powered-lift currently undergoing the type certification process are comparatively more sophisticated than the simple and uniform models of powered-lift proposed in the 1990s.

Currently, the FAA has several powered-lift in the type certification process. The powered-lift coming to the civilian market have varied greatly in design, flight, and handling characteristics with varying degrees of automation, more so than what was originally anticipated when applicants initially sought certification of powered-lift.

While none of the powered-lift for which type certification is being sought have yet been approved for civilian use, the powered-lift industry has identified many potential uses for these aircraft. The FAA anticipates the introduction of aircraft that vary in size and passenger seating configuration and employ both new and traditional kinds of propulsion systems into the civilian market. The initial expected entrant is the manufacturer of a four-passenger powered-lift with a maximum gross takeoff weight of 4,800 lbs., which is progressing through the FAA's type certification process.[13] This manufacturer proposed a powered-lift using six tilting electric engines with 5-blade propellers attached to a conventional wing and V-tail. The powered-lift has the characteristics of both a helicopter and an airplane and is intended to be used for operations under parts 91 and 135, with a single pilot onboard, under visual flight rules.

The FAA has previously described powered-lift as useful for civil applications, as these aircraft have "vertical take-off and landing and hovering capability like

[13] 87 FR 67399 (Nov. 8, 2022).

helicopters," and are able to cruise and "fly at higher airspeeds like airplanes."[14] This airspeed differentiation could result from aircraft configuration changes such as tilt-wing, tiltrotor, or tilt-propeller; thrust vectoring; direct-lift engines; or other means.

Manufacturers and initial operators of powered-lift indicate operations with powered-lift could offer many benefits over rotorcraft. For example, some powered-lift are capable of transporting heavier loads at higher altitudes and faster cruise speeds than rotorcraft. Such capability may increase efficiency in transporting crew and material to remote locations such as off-shore oil rigs and add diversity when considering landing points available that are currently available to helicopters and not airplanes. Certificate holders seeking to take advantage of these capabilities may also seek to use powered-lift for transporting passengers from point-to-point; for example, such transportation could occur from a heliport and proceed at turboprop airspeeds and ranges. Other opportunities may also exist in concentrated urban environments, where short point-to-point distances coupled with vertical capability may allow for more efficient transportation of passengers than existing ground transportation methods.

B. Related Rulemakings

The FAA is engaging in a multi-step process of updating the regulations that apply to powered-lift that traditionally have not operated in air carrier and commercial operations. On December 7, 2022, the FAA published the Update to Air Carrier Definitions NPRM.[15] As it pertains to this NPRM, the Update to Air Carrier Definitions NPRM proposed to amend the regulatory definitions in part 110, General Requirements, to add powered-lift to the definitions of "commuter operation" and "on-demand operation." The definitions in part 110 apply to all operations under 14 CFR chapter I,

[14] 60 FR 41165.
[15] RIN 2120-AL80, 87 FR 74995.

subchapter G, which includes parts 119 and 135.[16] In accordance with § 119.21, all commuter and on-demand operations must be conducted in accordance with part 135.[17] Accordingly, powered-lift must be added to the definitions of commuter operation and on-demand operation before powered-lift may be operated under part 135. For both definitions, the FAA proposed that powered-lift be added consistent with the existing requirements for airplane. As a result, all the part 135 proposals in this NPRM are based on an underlying premise that powered-lift is included in the definitions of commuter operation and on-demand operation. These proposals include the pilot certification proposals based on completion of a part 135 training curriculum, the part 135 training and qualification proposals, and the part 135 operational rule proposals. The FAA will reconcile this proposal with the Update to Air Carrier Definitions final rule as appropriate.

Additionally, on December 12, 2022, the FAA published the "Airman Certification Standards and Practical Test Standards for Airmen; Incorporation by Reference" (ACS IBR) NPRM.[18] As it pertains to this NPRM, the ACS IBR NPRM proposed to revise certain part 61 regulations to incorporate the Airman Certification Standards (ACS) by reference into the requirements for powered-lift pilot and flight instructor certification. The ACSs establish the standard for what an applicant must know, consider, and do to demonstrate proficiency to pass the practical tests required for issuance of the applicable airman certificate or rating. Specifically, for powered-lift, the ACS IBR NPRM proposed to incorporate by reference the ACSs for the following: Airline Transport Pilot and Type Rating for Powered-Lift Category, Commercial Pilot for Powered-Lift Category, Private Pilot for Powered-Lift Category, Instrument Rating-Powered-Lift, Flight Instructor for Powered-Lift Category, and Flight Instructor

[16] See 14 CFR 110.1 and 110.2.
[17] See 14 CFR 119.21(a)(4) and (5).
[18] 87 FR 75955.

Instrument Powered-Lift. Several proposals in this NPRM are based on the proposed incorporation of the powered-lift ACSs. Therefore, throughout the remainder of this NPRM, the FAA presumes that the powered-lift ACSs are incorporated by reference as proposed. The FAA will reconcile this proposal with the ACS IBR final rule as appropriate.

C. Part 1 Considerations

The FAA first notes that throughout this preamble and proposed regulatory text, the FAA utilizes certain terms that are defined in 14 CFR part 1. Currently, part 1 applies only to subchapters A through L of 14 CFR chapter I. In 1966, 14 CFR part 1 was originally limited in scope to apply to Federal Aviation Regulations (i.e., subchapters A through L) specifically because the agency codified certain subchapters in chapter I that were unrelated to aviation safety rules[19] at that time.[20] As discussed in this preamble, the FAA proposes to add subchapter L, which will contain the proposed SFAR in new part 194 (i.e., aviation safety rules). To apply the definitions as set forth in part 1 to proposed subchapter L, and given the relocation or deletion of certain non-aviation safety related regulations within chapter I, the FAA proposes to expand applicability of part 1 to apply to the entirety of 14 CFR chapter I.[21] This expansion would be effectuated through revisions to the introductory text of §§ 1.1, 1.2, and 1.3(a).

IV. **Powered-Lift Type Certification and FSTD Qualification**

A. Type Certification

The FAA is not proposing to establish any new requirements for the type certification of powered-lift, nor is it proposing to revise existing type certification

[19] For example, employee conduct was regulated through chapter I, subchapter O.
[20] Limitation of Applicability to "Federal Aviation Regulations," Final Rule, 31 FR 5054 (Mar. 29, 1966).
[21] Applicability of part 1 would also expand to subchapter N (part 198, pertaining to aviation insurance), however, the FAA does not foresee substantive changes as a result.

requirements. The FAA has determined that existing aircraft certification regulations are appropriate to type certificate powered-lift.

The FAA's rules for designating the applicable regulations for type-certificated products are in 14 CFR 21.17. Most products that have existing airworthiness standards (airplanes, rotorcraft, balloons, engines, and propellers) are type certificated in accordance with § 21.17(a). In general, the requirements for airplane type certification are in part 23 or 25, and rotorcraft are in part 27 or 29.

The FAA utilizes a tiered level of safety for the minimum certification standards for airplanes and rotorcraft and has established applicability standards to determine which minimum standard may be used for the certification of a particular aircraft. Part 23 provides the minimum certification standards for normal category airplanes, applicable to airplanes that have a passenger seating configuration of 19 or less and a maximum certificated takeoff weight of 19,000 pounds or less. Part 25 provides the minimum certification standards for transport category airplanes, applicable to airplanes that have a passenger seating configuration of 20 or more or a maximum certificated takeoff weight of greater than 19,000 pounds. Part 27 provides the minimum certification standards for normal category rotorcraft, applicable to rotorcraft that have a passenger seating configuration of 9 or less and a maximum weight of 7,000 pounds or less. Part 29 provides the minimum certification basis for transport category rotorcraft, applicable to rotorcraft with a passenger seating configuration of 10 or more or a maximum weight of more than 7,000 pounds. An applicant seeking to certificate a normal category airplane or rotorcraft under part 23 or 27, respectively, can request to use the higher certification standards of part 25 or 29 for such aircraft.

For aircraft for which the FAA has not established airworthiness standards under subchapter C of chapter I of 14 CFR (e.g., gliders, airships, powered-lift, very light airplanes), the FAA uses the special class aircraft process in § 21.17(b). The special class

process was created to address the novel features of unique and nonconventional aircraft without the need for additional processes such as special conditions or exemptions that would be required if the FAA used the airworthiness standards in place under existing parts of title 14.[22] Using the special class process, the FAA designates airworthiness requirements as the certification basis for each aircraft design, including its engines and propellers.[23] The FAA may designate appropriate and applicable airworthiness requirements from the existing airworthiness standards in parts 23, 25, 27, 29, 33, and 35, and it may also include unique airworthiness criteria developed specifically for the individual product, that provide an equivalent level of safety to existing standards.[24] The FAA has not yet established powered-lift airworthiness standards in subchapter C of chapter I of 14 CFR. Therefore, the FAA has determined that powered-lift will be type-certificated as a special class aircraft.

To type-certificate powered-lift as a special class aircraft, the FAA must designate airworthiness requirements as the certification basis for that aircraft, which provide an equivalent level of safety to existing airworthiness standards. When conducting the evaluation for determining an equivalent level of safety, the FAA will consider characteristics of the particular aircraft such as the aircraft size, seating capacity, and

---

[22] For products type certificated in accordance with § 21.17(a), the FAA may issue special conditions when it determines that existing airworthiness regulations do not provide adequate or appropriate safety standards because of a novel or unusual design feature of the product. Special conditions are issued in accordance with 14 CFR part 11 and contain such safety standards for the product as the FAA finds necessary to establish a level of safety equivalent to that established in the regulations. The. The FAA may grant an exemption from the requirements of a regulation when an applicant petitions for relief under 14 CFR part 11.

[23] Applicants of special class aircraft who propose engine and/or propeller designs with their aircraft will have the engine and propeller approved with the aircraft type certificate. This would result in a certification basis that includes criteria for the aircraft, engine, and/or propeller. Alternatively, applicants seeking certification for special class aircraft may propose the installation of engines and/or propellers that have been issued their own type certificate, which would result in a certification basis with criteria for only the aircraft. The engine and propeller would be type certificated under parts 33 and 35, respectively.

[24] For certain special classes of aircraft, the FAA has designated airworthiness criteria in an advisory circular (AC): AC 21.17-1A for airships, AC 21.17-2A for gliders, and AC 21.17-3 for very light airplanes (VLA). Currently, the FAA expects to issue airworthiness criteria for powered-lift, specific to the particular applicant. Although the FAA is not publishing an AC for powered-lift airworthiness criteria with this proposed rulemaking, the agency may publish powered-lift airworthiness standards through a future AC or rulemaking.

performance, among other things, in comparison to the capabilities of aircraft type-certificated under the existing airworthiness standards for airplanes and rotorcraft. When establishing the certification basis for a specific powered-lift project, the FAA will publish the proposed airworthiness criteria, including an explanation of its equivalency determination, in the *Federal Register* for public notice and comment.[25]

In certain instances, specific airworthiness or aircraft equipage requirements for the issuance of a type certificate may not be sufficient to meet the requirements of a particular operating rule or operation. Applicants seeking type design approval for powered-lift should identify areas where additional approvals are required to support the anticipated operational use of the aircraft to avoid having to obtain a subsequent type design change approval. In the case where an approved aircraft type-design does not include the required approvals or aircraft equipage needed for a specific operation or operating rule, then a type design change may be required to enable the use of that aircraft.

In certain cases, the operational rules in parts 91 and 135 cite specific airworthiness standards from the certification rules in part 23, 25, 27 or 29. When an airworthiness standard is referenced in a particular operating rule, those specific standards listed may or may not be used in their entirety due to some of the designs unique to each particular aircraft. When a particular airworthiness certification standard is referenced, but it is not practical to use that standard in its entirety due to the design of the powered-lift, then to maintain an equivalent level of safety, the FAA will determine which existing airworthiness standards apply, or if another standard must be created. For example, §§ 91.609 and 135.152, the regulations requiring flight data recorders (FDR), both point to specific airworthiness standards found within part 23, 25, 27, or 29. In this

[25] E.g., see: Airworthiness Criteria: Special Class Airworthiness Criteria for the Joby Aero, Inc. JAS4-1 Powered-Lift, 87 FR 67399 (Nov. 8, 2022).

case, the FAA will review the requirements contained within parts 23, 25, 27, and 29 and determine which standard or set of standards would apply, or if the FAA needs to create a new standard to ensure the data captured achieves an equivalent level of safety in these novel aircraft designs.

In an additional example, certain powered-lift type-certificate applicants may want their aircraft to have the capability to use Copter Procedures under part 97, which would require the aircraft to have specific equipage and stability capabilities equivalent to either appendix B to part 27 or 29 as part of the type-certification approval. The identified standards in each of the examples would be included in the aircraft's certification basis.

Throughout this preamble and the SFAR, the FAA applies certain operating regulations to large powered-lift that currently apply to large transport category airplanes. The FAA evaluated the weight parameters for both transport category airplanes and transport category rotorcraft and determined that the weight limit for large aircraft, which is 12,500 pounds (lbs.) and falls between the airplane (19,500 lbs.) and rotorcraft (7,500 lbs.) transport category weight limits, would be an appropriate weight at which to apply airplane transport category standards to powered-lift.

This approach is consistent with the agency's approach to type certification of powered-lift under § 21.17(b), in that the agency has previously identified 12,500 lbs. as an appropriate weight at which to apply certain transport category certification standards from part 25, even though the powered-lift may weigh less than 19,500 lbs. Accordingly, small powered-lift, weighing less than 12,500 lbs., would not be subject to transport category standards except in one instance in subpart I of part 135 (§ 135.397(b)), where a small powered-lift with more than 19 seats would be subject to certain airplane performance operating limitations. The FAA invites comment on whether the public believes there is a more appropriate weight at which to apply transport category airplane regulations to powered-lift.

B. Noise Considerations

The FAA is statutorily required to protect the public from aircraft noise by adopting noise standards and operating regulations as necessary. Noise certification regulations are contained in 14 CFR part 36 for jet airplanes, small airplanes, rotorcraft and tiltrotors. Given recent technological advancement regarding fabrication of small and powerful electric motors, actuators, and advance control system technologies, manufacturers have started to apply these technologies in the design and development of highly individualized and novel aircraft that are significantly different from the legacy conventional aircraft categories defined in the current noise certification standards of part 36. Such anticipated new entrant aircraft are expected to offer capabilities that range from a single-pilot recreational all-electric VTOL aircraft to piloted, powered-lift, multi passenger air taxis.

Rather than use the existing requirements for small propeller airplanes, jet transport airplanes, helicopters, or tiltrotors in part 36, such diverse conceptual designs may require noise certification requirements that are tailored to these new aircraft types. The FAA will examine each application and determine whether existing part 36 requirements are appropriate as a noise certification basis, as it does for all noise certification applicants. If the current regulations cannot be applied appropriately, the FAA may promulgate a rule of particular applicability to establish a noise certification basis for a new aircraft design. The dynamic noise sources from these aircraft have been shown to be complex, and the FAA does not yet have much data on the aircraft types and noise signatures expected from these new entrants. Accordingly, until sufficient data are collected, the FAA would not be able to promulgate standards of general applicability for these aircraft.

The FAA invites comment on whether any manufacturer anticipates undergoing noise certification as a turbojet-powered-lift as required in accordance with part 36. If a

turbojet-powered-lift certification applicant begins the noise certification process, the FAA would propose to amend the SFAR to include the operating noise limits in subpart I of part 91 as applicable to turbojet-powered-lift. The FAA also seeks comment on this approach to the noise certification of turbojet-powered-lift.

C. Qualification of Powered-Lift Flight Simulation Training Devices (FSTD)

Part 60 prescribes the rules governing the initial and continuing qualification of all aircraft Flight Simulation Training Devices (FSTDs), which includes full flight simulators (FFSs) and flight training devices (FTDs)[26] used to meet the training, evaluation, or flight experience requirements for flightcrew member certification or qualification. These rules apply to each person using or applying to use an FSTD to meet any requirement in 14 CFR chapter I, including in parts 61, 91, 135, 141, and 142.[27] As specified in § 60.11(b), no person may use nor allow the use of an FSTD for flightcrew member training or evaluation, or for obtaining flight experience, unless the FSTD is qualified under part 60.[28] In accordance with § 60.15, the FAA qualifies each FSTD at a specific level if that FSTD meets the applicable Qualification Performance Standards (QPS).[29] The QPS are published in the following appendices to part 60: A for airplane FFSs, B for airplane FTDs, C for helicopter FFSs, D for helicopter FTDs, E for the quality management system for all FSTDs, and F for definitions and abbreviations applicable to part 60. While appendices E and F will apply to powered-lift FSTDs, the FAA has not yet established the QPS for powered-lift FSTDs.

In recent years, rapid technological advancements in powered-lift have progressed across the industry, particularly with electric vertical takeoff and landing (eVTOL) aircraft. Many powered-lift are in various stages of development with many different

---

[26] See 14 CFR 1.1, which defines for FFSs and FTDs.
[27] 14 CFR 60.1.
[28] 14 CFR 60.11 specifies additional requirements that must be met for FSTD use.
[29] FFSs are qualified as levels A through D; FTDs are qualified as levels 4 through 7.

unique designs and operating characteristics. Due to the wide variation of powered-lift and rapid pace of development, the FAA has determined that developing a new FSTD standard for powered-lift aircraft within the part 60 QPS framework would be premature, as any new FSTD standard may quickly become obsolete or inapplicable. As previously discussed, one intention of the SFAR is to inform the FAA of sufficient operational data of emerging powered-lift to establish future permanent regulations, including that information required to develop a powered-lift FSTD QPS.

The FAA recognizes, however, that powered-lift FSTDs are currently in development and emphasizes the need to evaluate powered-lift FSTD fidelity and capability, much like airplane and helicopter FSTDs are evaluated.[30] Therefore, to enable the qualification of FSTDs for use in pilot training for powered-lift aircraft, the FAA is proposing to add flexibility to part 60 in proposed § 194.105 to permit qualification of FSTDs of powered-lift using components of existing standards for airplanes and helicopters in appendices A through D to part 60, where applicable, as determined by the FAA, that would provide an equivalent level of safety to existing QPS components.

While many of the existing FSTD qualification standards in the part 60 QPS may be applicable for evaluation of FSTDs representing powered-lift (e.g., general flight deck configuration requirements), due to the unique characteristics of the many possible powered-lift designs and associated pilot training requirements, alternate testing and evaluation methods may be required to fully validate the characteristics of those FSTDs to support the required training (e.g., transition modes from thrust-borne to wing-borne lift).

---

[30] The FAA has long recognized the safety advantages of flight training in FSTD. In many cases, flight simulators have proven to provide more in-depth training than can be accomplished in the aircraft. In particular, flight simulators allow training for emergency situations, such as fire, total loss of thrust, and systems failures that cannot be safely conducted in flight. See 61 FR 34508 (July 2, 1996).

In these instances where existing standards are not found to be sufficient to fully evaluate an FSTD for a special class of aircraft, other FSTD qualification standards as proposed by the FSTD sponsor may be accepted by the Administrator as providing an equivalent level of safety. When establishing the qualification basis, the FAA will publish the proposed standard in the *Federal Register* for public notice and comment, including an explanation of the FAA's safety determination. The ability to qualify an FSTD for powered-lift in this manner, as well as the notice and comment process, would closely follow the established process used to certify special classes of aircraft as described in § 21.17(b).

While deviation authority currently exists in § 60.15(c)(5) for the initial qualification of FSTDs using alternate FSTD standards, the scope of the deviation authority does not extend to the qualification of FSTDs representing new categories of aircraft such as powered-lift. The FAA added deviation authority to § 60.15(c)(5), to deviate from the technical requirements in the part 60 QPS applicable to airplane and helicopter FFSs and FTDs.[31] Therefore, deviations issued in accordance with § 60.15(c)(5) may apply only to FSTD qualification where standards currently exist in the QPS of part 60 (currently airplanes or helicopters).

The FAA recognizes that, there are current FSTD qualification projects in process with the FAA through deviation authority found in part 60. Additionally, a small number of sponsors and manufacturers have applied for and obtained deviation for powered-lift FSTDs. The FAA notes that, while these persons have been granted deviations, there are currently no qualified powered-lift FSTDs as an outgrowth of these deviations because the powered-lift represented by the FSTD are not yet type-certificated, which is a contingency of deviation. The FAA will collaborate with these sponsors and

[31] 81 FR 18205. Additionally, § 60.15(c)(5)(ii) states that deviation may only be considered from minimum requirements tables, objectives testing tables, functions and subjective testing tables, and other supporting tables and requirements in the part 60 QPS in appendices A through D.

manufacturers, as well as those with qualification projects in process, to accommodate an efficient transition to this new framework that does not result in a qualification gap.

Additionally, due to the high level of interest in the advancement of Advanced Air Mobility (AAM) aircraft, the FAA is aware of several international working groups, including consensus standards organizations that are in various stages of developing FSTD standards for powered-lift. While there are no such consensus standards currently published for use in FSTD qualification, the FAA anticipates forthcoming published standards. The FAA notes that these consensus standards may be considered during the qualification of powered-lift FSTDs under this part. However, the FAA declines to include them as a compulsory basis for qualification given the current lack of consensus standards to evaluate against a permanent QPS for powered-lift.

V. **Certification of Powered-Lift Pilots**

A. Establish a Type Rating Requirement for Persons Seeking to Act as PIC of Powered-Lift

Part 61 prescribes the requirements for issuing pilot and flight instructor certificates and ratings, the conditions under which those certificates and ratings are necessary, and the privileges and limitations of those certificates and ratings.[32] Pursuant to part 61, the FAA issues six levels of pilot certificates: student, sport, recreational, private, commercial, and ATP.[33] The FAA also issues category, class, and type ratings on the pilot certificate. To act as PIC of any aircraft, a person must hold the category, class, and type rating (if class and type rating are applicable) on their pilot certificate.[34] To

[32] 14 CFR 61.1(a)(1).

[33] 14 CFR 61.5(a)(1).

[34] 14 CFR 61.31(d).

obtain certificates and ratings, an applicant must meet aeronautical experience requirements and successfully complete a practical test in an aircraft appropriate to the rating(s) sought.[35]

For the purpose of airmen ratings, "category" is defined as a broad classification of aircraft (e.g., airplane, rotorcraft, powered-lift), and "class" is defined as a group of aircraft within a category that have similar operating characteristics (e.g., single engine, multiengine, helicopter).[36] In 1997, the FAA established a powered-lift category rating in part 61 for the private pilot through ATP certificates, as well as for the flight instructor certificate in anticipation of further developments in aviation technology.[37] At the time of that rulemaking, the FAA determined that it was not feasible to establish class ratings within the powered-lift category.[38] The FAA considered whether powered-lift should include class ratings and type ratings but ultimately decided not to create powered-lift classes or require type ratings for powered-lift beyond the type rating requirements set forth in § 61.31(a) (i.e., large aircraft or as specified by the Administrator under aircraft type certificate procedures).[39] The FAA concluded that safety needs were met by establishing a separate aircraft category only, and requiring a type rating for every make and model of powered-lift might discourage the development of smaller powered-lift intended for general aviation.[40]

In light of powered-lift coming to market, the FAA has reconsidered whether a type rating should be required for each type[41] of powered-lift. This section discusses the

---

[35] For most pilot certificates, applicants also must receive training or complete home study on aeronautical knowledge areas and pass a knowledge test.
[36] 14 CFR 1.1.
[37] Flight Instructor, Ground Instructor, and Pilot School Certification Rules; Final Rule, 62 FR 16220 at 16231 (Apr. 4, 1997).
[31] Flight Instructor, Ground Instructor, and Pilot School Certification Rules; NPRM, 60 FR 41160 at 41165 (Aug. 11, 1995).
[39] Id.
[40] Id.
[41] The FAA defines type in § 1.1 to mean, in pertinent part, a specific make and basic model of aircraft, including modifications thereto that do not change its handling or flight characteristics and, as used with respect to the certification of aircraft, means those aircraft which are similar in design.

current type rating requirements of § 61.31(a), the challenges with the current regulatory framework in part 61 for powered-lift, and the FAA's proposal to require the PIC of a powered-lift to hold a type rating on their pilot certificate.

Section 61.31(a) prescribes when a person must hold a type rating. Currently, to act as PIC of a large aircraft[42] (except lighter-than-air) or a turbojet-powered airplane, a person must hold a type rating for the aircraft on their pilot certificate. Additionally, a person must hold a type rating on their pilot certificate for other aircraft specified by the Administrator through the aircraft type certificate procedures.[43] To obtain a type rating, a person must receive aircraft-specific training and pass a practical test in the aircraft for the type rating sought.[44]

Initially, the FAA required type ratings only for large aircraft when passengers were carried onboard or when the large aircraft was operated for compensation or hire, and for helicopters that were operated by ATPs.[45] However, in 1965, the FAA expanded the aircraft for which it required a person to hold a type rating to all large aircraft and small turbojet-powered airplanes.[46] The FAA explained that the speed, complexity, and operating characteristics of large aircraft require the PIC to demonstrate their ability to operate the large aircraft regardless of the type of activity in which the aircraft is engaged.[47] For small, turbojet-powered airplanes, the FAA explained that the

---

[42] Section 1.1 defines "large aircraft" as "aircraft of more than 12,500 pounds, maximum certificated takeoff weight."

[43] Aircraft type certification regulations are found in 14 CFR part 21. As discussed in section V.H.1 of this preamble, FSBs are established when the responsible FAA Aircraft Certification Office issues a Type Certificate for large aircraft, turbojet powered airplanes, and other aircraft specified by the Administrator through the aircraft certification process. Powered-lift will be evaluated under the existing FSB process, which will determine the requirements for a pilot type rating and develop training objectives for the type rating.

[44] 14 CFR 61.63(d), 61.157(b).

[45] In 1964, 14 CFR 61.15(d) stated that, in addition to category and class ratings, the name of each type of large aircraft for which a pilot is rated is placed on the person's certificate if that type of aircraft is certificated by the Administrator for civil operations, and, in the case of ATPs, a helicopter type rating is issued for each type of helicopter. In 1964, 14 CFR 61.159 stated that for ATP aircraft ratings, the category and class of aircraft and type, if it is a helicopter or large aircraft, are placed on the person's certificate.

[46] Pilot Rating Requirements, Final Rule, 30 FR 11903 (Sep. 17, 1965).

[47] Pilot Rating Requirements, NPRM, 29 FR 13038 (Sep. 17, 1964).

performance, environment, and operating characteristics of those airplanes are very similar to those of large turbojet-powered airplanes.[48] The FAA determined that, because turbojet-powered airplanes are so refined that improper or inept handling is likely to be immediately critical, a person must demonstrate their competency to operate those airplanes by obtaining a type rating for the particular type of airplane involved.[49]

Currently, the FAA's regulatory framework in part 61 allows for the issuance of a powered-lift category rating on a pilot certificate. Industry has begun developing new powered-lift varying widely in design from the relatively simple and uniform models of powered-lift that the FAA anticipated in the 1990s. The powered-lift coming to the civilian market have complex and unique design, flight, and handling characteristics with varying degrees of automation. More specifically, powered-lift designs vary in unique configurations from tilt-wing, tilt-propeller, lift plus cruise, and tilt plus cruise aircraft. These new powered-lift designs are capable of VTOL operations and many are also capable of takeoff and landings using wing-borne lift. As a result, the flight deck designs require new flight controls, commonly referred to as inceptors.[50] These aircraft have unique flight and handling qualities that are managed with indirect flight controls, meaning movement of the inceptor does not directly correlate to the movement of a specific flight control surface. Because each powered-lift can have different configurations, unique inceptors, diversified flight controls, and complicated and distinctive operating characteristics, the FAA has determined that it is still not feasible to establish classes within the powered-lift category at this time.

If the FAA were to generalize the training requirements based on classification of powered-lift, the training requirements would not sufficiently address the unique

---

[48] Id.
[49] Id.
[50] For purposes of this preamble, the term "inceptor" refers to a wide variety of non-traditional pilot controls through which pilot inputs are managed for the purpose of operating the powered-lift.

characteristics of each powered-lift that requires specific aircraft training and evaluation to determine pilot competency in flying the aircraft. To further underscore this need, similar to large aircraft and turbojet-powered airplanes, improper or inept handling of certain powered-lift is likely to be immediately critical. The kinds of operations envisioned for powered-lift include low altitude, dense urban environments, and congested airspace where there will be little room for error. Pilot knowledge and skill in operating powered-lift must be assessed and requiring a type rating most effectively accomplishes this safety objective.[51] Finally, to maintain consistency with international standards, ICAO requires that, in the absence of establishing powered-lift classes, a PIC of a powered-lift must hold a type rating for the aircraft flown.[52]

Requiring persons to hold type ratings for powered-lift would establish an appropriate level of safety by ensuring persons receive adequate training and are tested on the unique design and operating characteristics of each powered-lift. Specifically, as discussed in section V.H of this preamble, an FSB is typically formed for aircraft that require a type rating. The FSB would evaluate each powered-lift on a case-by-case basis to determine whether the training recommended by the manufacturer would enable the pilot to safely operate the aircraft in the NAS. Additionally, the FSB would identify the unique characteristics of each powered-lift that require special training. Subsequently, these findings are utilized in conjunction with the appropriate powered-lift ACS to conduct training and practical tests for a type rating, ensuring that an applicant is knowledgeable and capable of safely operating the unique powered-lift type.

Accordingly, the FAA proposes to revise § 61.31(a) by adding a new paragraph (a)(3), which would require a person who acts as PIC of a powered-lift to hold a type

---

[51] The FAA considered proposing an endorsement for each type of powered-lift but determined that it would be insufficient to address pilot proficiency for purposes of initial qualification. Current endorsements as set forth in § 61.31 generally involve limited training on a specific capability (e.g., high performance aircraft) and have no independent evaluation of the pilot's proficiency.

[52] Annex 1, Section 2.1.3.2.

rating for the aircraft. The FAA also proposes to redesignate current § 61.31(a)(3), which requires a type rating for other aircraft specified by the Administrator through aircraft type certificate procedures, as new § 61.31(a)(4). The FAA proposes to make a conforming amendment to § 61.5, which sets forth the various certificates and ratings that may be issued under part 61. Specifically, § 61.5(b)(7) sets forth the aircraft type ratings that may be placed on a pilot certificate when the applicant satisfactorily accomplishes the training and certification requirements for the rating sought. These type ratings include the aircraft currently identified in § 61.31(a) as well as the SIC pilot type rating for aircraft that are type-certificated for operations with a minimum crew of at least two pilots. The FAA proposes to add a new paragraph (b)(7)(iii) to reflect the proposed aircraft type rating for a powered-lift and to redesignate current § 61.5(b)(7)(iii) as new § 61.5(b)(7)(iv). With respect to current § 61.5(b)(7)(iv), which allows for the issuance of a SIC pilot type rating, the FAA has determined that this provision does not belong under §61.5(b)(7), which contains aircraft type ratings, because a pilot type rating subject to "SIC Privileges Only" is not an aircraft type rating.[53] To more accurately depict the SIC pilot type rating as a rating that is placed on a pilot certificate, the FAA proposes to relocate the provision that currently exists in § 61.5(b)(7)(iv) to new § 61.5(b)(9).

In addition to the type-certificated powered-lift that will be coming to civil operations, the FAA already has issued special airworthiness certificates for experimental purposes in accordance with § 21.191 to several powered-lift and anticipates a continuing need to issue these special airworthiness certificates as more powered-lift are developed.[54] Because most of these aircraft do not have established type ratings, the

---

[53] There is no practical test required for the issuance of the SIC pilot type rating. 14 CFR 61.55(e)(7). A pilot type rating subject to "SIC Privileges Only" is solely intended to allow persons who met the SIC requirements found in § 61.55 to operate in international airspace. Second-in-Command Pilot Type Rating, Final Rule, 70 FR 45264 (Aug. 4, 2005). See Legal Interpretation to Mr. Counsil (Apr. 13, 2012).

[54] The FAA does not anticipate that part 141 pilot schools and part 142 training centers will have the capacity to provide training and testing for ratings and authorizations for each and every type of experimental powered-lift developed. This is particularly true for operators of experimental amateur-built

proposed type rating requirement of § 61.31 would not apply.[55] In general, experimental aircraft are not subject to the same airworthiness standards as their counterparts holding standard airworthiness certificates. For instance, these aircraft are not required to satisfy many of the regulatory design, build, maintenance, and inspection requirements mandated for aircraft holding a standard airworthiness certificate. As a result of these differing standards, experimental aircraft are subject to certain operational requirements, including restrictions on the purpose of the operation,[56] a general prohibition on operating over densely populated areas unless otherwise authorized by the Administrator,[57] and other operating limitations assigned during the aircraft certification process to further mitigate risks associated with various hazards that may be introduced in experimental aircraft.

In accordance with § 91.319(i), the Administrator may prescribe additional operating limitations for experimental aircraft where necessary for safety. The FAA has employed the operating limitations issued with an experimental airworthiness certificate to require pilots to hold category and class ratings for all experimental aircraft and additional authorizations for certain experimental aircraft even when no passengers are carried on board.[58] As with experimental airplanes and experimental rotorcraft, the FAA

---

powered-lift, amateur kit-built powered-lift, and exhibition powered-lift. Therefore, the FAA will maintain the current path to certification codified in part 61, which does not require training under an approved training program, for experimental powered-lift pilots at the private pilot level and above. See 14 CFR 61.109(e), 61.129(e), 61.163, and 61.187.

[55] Section 61.31(l)(1) excludes all aircraft not type-certificated as airplanes, rotorcraft, gliders, lighter-than-air aircraft, powered-lifts, powered parachutes, or weight-shift-control aircraft from § 61.31 applicability. This provision is meant to create an exception for aircraft for which there is no established category or class rating (e.g., hoverboards, jetpacks). The use of the term "type-certificated" could create confusion since not all aircraft that meet the regulatory definition of airplane or rotorcraft will be type certificated. Because this provision could be read as conflicting with more specific exceptions for experimental aircraft in § 61.31(l)(2), the FAA is proposing to clarify the intent of this exception by specifying that the section does not require a category and class rating for aircraft that are not identified under § 61.5(b).

[56] See § 91.319(a)(1), which prohibits a person from operating an experimental aircraft for other than the purpose for which the certificate was issued.

[57] See § 91.319(c), which generally prohibits experimental aircraft operations over densely populated areas or in congested airways, unless otherwise authorized by the Administrator.

[58] The FAA provides guidance to its workforce in FAA Order 8130.2J, Appendix D, Table D-1, Operating Limitations on how to evaluate and apply operating limitations to experimental aircraft.

will apply category ratings and other authorizations (e.g., the authorization to act as PIC) through operating limitations for experimental powered-lift, as warranted.

Additionally, the FAA notes its use of certain terms throughout this preamble and the proposed SFAR pertaining to the operation of experimental powered-lift. To clearly delineate to whom the FAA is referring, the FAA proposes to define, in proposed § 194.103(b), the terms "manufacturer," "instructor pilot," and "test pilot." First, the FAA proposes to define a manufacturer as any person who holds, or is an applicant for, a type or production certificate for an aircraft. An amateur builder under § 21.191(g), a builder of a kit aircraft under § 21.191(h), or the holder of a restricted category type certificate is not considered a manufacturer for purposes of the SFAR set forth by proposed part 194.[59] This definition will draw a distinction between persons who are amateur aircraft builders and manufacturers with a safety system program and quality control systems in place that meet a higher level of safety.

The FAA also proposes to define certain pilots employed or used by a powered-lift manufacturer, including in a contractor or consultant role. First, the FAA proposes to define an instructor pilot as a pilot employed or used by a manufacturer of a powered-lift to conduct operations of the powered-lift for the purpose of developing a proposed training curriculum[60] and providing crew training. Although some of these instructor pilots may hold FAA flight instructor certificates, their roles and responsibilities for the manufacturer do not involve flight training for meeting FAA airman regulations. Second, the FAA proposes to define a test pilot as a pilot employed or used by a manufacturer of a

---

[59] The FAA notes that "person" is defined in § 1.1 as an individual, firm, partnership, corporation, company, association, joint-stock association, or governmental entity, and includes a trustee, receiver assignee, or similar representative of any of them. Therefore, a broad range of entities, other than an amateur builder or builder of a kit aircraft under § 21.191(g) and (h) or a restricted category type certificate holder, could be considered manufacturers (e.g., aerospace companies, transportation corporations) for purposes of proposed part 194.

[60] For purposes of this preamble, the term "proposed training curriculum" refers to the curriculum that the manufacturer is developing. The FAA is describing the training curriculum as "proposed" because the curriculum will not be validated at the time the instructor pilot provides the training to the test pilot.

powered-lift to conduct operations of the powered lift for the purpose of research and development and showing compliance with the regulations. Additional discussion on the responsibilities of test pilots may be found in section V.D.

B. Applicability of the Type Rating Requirement to Military Pilots

For more than 80 years, the FAA's regulations have allowed military pilots to apply for FAA pilot certificates based on their military pilot experience.[61] Currently, § 61.73(a) permits a military pilot or former military pilot[62] who meets certain requirements to apply on the basis of their military pilot qualifications for a commercial pilot certificate with the appropriate category and class rating, an instrument rating with the appropriate aircraft rating, and a type rating.[63] Additionally, § 61.73(g) permits a military or former military instructor pilot or pilot examiner to apply for, and be issued, a flight instructor certificate with appropriate aircraft ratings, provided certain requirements are met.

Because there are no type-certificated powered-lift to date, there are no standard category powered-lift available for civilian pilots to obtain certification through the regular pathway of ground training, flight training, and successful completion of a knowledge test and practical test. The U.S. Armed Forces, however, maintains and uses powered-lift in military operations (e.g., the Bell-Boeing V-22 Osprey, McDonald-Douglas AV-8 Harrier, F-35B STOVL), where pilots establish experience operating these powered-lift.[64] Therefore, as a result of the military pilot competency provisions set forth

---

[61] 14 CFR 20.149 (1938), Military competence, stated that an applicant who has been an active member of certain military branches may be deemed competent to have met certain requirements to be issued a pilot certificate, including aeronautical knowledge, experience, and skill.
[62] For purposes of this preamble, references to military pilots are inclusive of former U.S. military pilots.
[63] While military pilots may receive an FAA certificate through their military experience, they must continue to follow FAA regulations to exercise their FAA certificate(s) received through § 61.73 (e.g., recency of experience requirements in § 61.57).
[64] Based on discussions with current and former military powered-lift pilots, a military powered-lift pilot will generally have between 1,000–2,500 hours of total powered-lift time, which includes about 500–1,250 hours of PIC powered-lift time. See Recognition of Pilot in Command Experience in the Military and Air Carrier Operations, 87 FR 57578, 57580 (Sep. 21, 2022).

in § 61.73, the only pilots who currently hold commercial pilot certificates with powered-lift category ratings, instrument-powered-lift ratings, and flight instructor certificates with powered-lift category and instrument ratings are military pilots who obtained those certificates and ratings under § 61.73, based on their military pilot qualifications.

Due to the absence of any type-certificated powered-lift, military pilots who have received an FAA powered-lift category rating are currently limited in their ability to exercise those privileges in civil operations. At this time, the only powered-lift that have entered civil operations are those that have been issued experimental airworthiness certificates.[65] The FAA anticipates two additional avenues for powered-lift to enter civil operations: (1) new FAA type-certificated powered-lift, or (2) surplus military powered-lift, similar to military airplanes and rotorcraft that enter civil operations with an experimental or restricted category airworthiness certificate. There are no surplus military powered-lift that have come into civil operations through the special airworthiness certification process, and the FAA does not anticipate surplus military powered-lift to enter civil operations in the near term. If this were to occur, the FAA will follow the existing regulations, policies, and procedures to address surplus military powered-lift as currently used to evaluate surplus military airplanes and rotorcraft. Specifically, type ratings are designated for surplus military aircraft with civil certificate type ratings through the FSB process, which would evaluate each respective powered-lift, further discussed in section V.H of this preamble.

Under § 61.73(e), an aircraft type rating may be issued to a military pilot only for a type of aircraft that has a comparable civil type designation by the Administrator. Because there are currently no military powered-lift for which comparable civil type ratings have been designated, military pilots with powered-lift experience are unable to

[65] For those manufacturers currently developing powered-lift, operating limitations pertaining to pilot qualifications may be applied to experimental powered-lift. FAA Order 8900.1 Vol. 5, Chap. 9, Sec. 2.

obtain a powered-lift type rating pursuant to § 61.73. As a result, military pilots seeking a commercial pilot certificate under § 61.73 are currently limited to the issuance of a powered-lift category rating and an instrument-powered-lift rating.[66] While these military pilots have extensive flight experience in a powered-lift operated by the U.S. Armed Forces, the FAA finds that this experience alone is insufficient for military pilots to transition safely to the types of powered-lift currently working through the FAA type certification process.[67] Specifically, military aircraft maintain certain characteristics that are unique to U.S. Armed Forces missions that will not be present in civil powered-lift. The technology, operating characteristics, and flight control implementation may not correspond to the civil operations anticipated for FAA type-certificated powered-lift. Further, as previously discussed, there are also significant differences between each civil powered-lift in performance, complexity, and operating characteristics. For these reasons, the FAA is not proposing any exception to the type rating requirement for military pilots who obtain powered-lift ratings through military competency.

Military pilots may continue to apply for commercial pilot certificates with powered-lift category ratings, instrument-powered-lift ratings, and flight instructor certificates with powered-lift category and instrument ratings pursuant to the existing requirements in § 61.73, based on their military pilot qualifications. However, to act as PIC of a type-certificated powered-lift, these military pilots would be required to pass a practical test to obtain a type rating on their pilot certificate for the type of civil powered-

---

[66] Should a civil type-certificated version of a military powered-lift become available, pilots with the appropriate military experience, as identified in § 61.73, would be eligible to receive the type rating in the same manner that airplane and rotorcraft military pilots currently receive them, pursuant to § 61.73(e).

[67] The FAA has historically found some differences between military aircraft/operations and civilian aircraft/operations and implemented safety measures to address them when necessary. For example, in 1967, a military branch began using "pink" instrument cards for instrument flight operations in tactical environments. Because these pilots were not trained in IFR airway operations or in the use of standard approach procedures, the FAA amended § 61.73 creating a restriction based on the incongruence between the military practice and an FAA instrument rating. The restriction was removed when the branch ceased issuing the cards. Final Rule, Condition for Issuing Instrument Rating Based on Military Competence, 23 FR 10643 (Jul. 20, 1967) (adding § 61.73(g)(6)); Final Rule, Pilot, Flight Instructor, Ground Instructor, and Pilot School Certification Rules, 62 FR 16220 (Apr. 4, 1997) (removing § 61.73(g)(6)).

lift they seek to fly. Likewise, those military instructors who have obtained or will obtain a flight instructor certificate with a powered-lift category and instrument rating through military competency would be permitted to conduct flight training in a powered-lift only after obtaining a type rating on their pilot certificate for the powered-lift in which they conduct flight training.[68]

C. Applicability of the SIC Qualification Requirements of § 61.55 to Powered-Lift

Given the diverse characteristics of powered-lift discussed earlier, the FAA considered whether a person serving as SIC of a powered-lift should also be required to hold a powered-lift type rating on their pilot certificate. Upon evaluating the current SIC qualification requirements of § 61.55, the role of a PIC, and the reasons for requiring the PIC to hold a type rating, the FAA has determined that the SIC qualification requirements of § 61.55 are sufficient, provided the person serving as SIC has passed the practical test in a powered-lift that is capable of performing all the tasks required by the applicable Powered-Lift Category ACS.[69]

Currently, to serve as SIC of an aircraft type-certificated for more than one required pilot flight crewmember or in operations requiring an SIC pilot flight crewmember in part 91 (excluding subpart K of part 91),[70] a person must satisfy the SIC qualification requirements set forth in § 61.55. Section 61.55(a) requires the person serving as SIC to hold (1) at least a private pilot certificate with the appropriate category

---

[68] Under § 61.195(e), a flight instructor may not give flight training, including instrument training, in an aircraft that requires the PIC to hold a type rating unless the flight instructor holds a type rating for that aircraft on their pilot certificate.

[69] The FAA is proposing to permanently add new § 61.55(a)(4) to address SIC qualifications when a powered-lift is not able to perform all tasks on a practical test. This change is "permanent" because it would exist in 14 CFR part 61 as opposed to proposed part 194. To the extent a person would not be tested on a task specified in that ACS, section V.G of this preamble explains a proposal to impose additional training and an endorsement to ensure the person is trained and found proficient on any tasks that were omitted on the practical test prior to serving as SIC of a different powered-lift that is capable of performing the task.

[70] As discussed in this section, certain requirements in § 61.55 do not apply to a person who is designated and qualified as PIC or SIC under subpart K of part 91 (Fractional Ownership Operations).

and class rating, (2) an instrument rating or privilege that applies to the aircraft being flown if the flight is under IFR,[71] and (3) at least a pilot type rating ("SIC Privileges Only") for the aircraft being flown unless the flight will be conducted as domestic flight operations within the U.S. airspace.

Section 61.55(b) requires the person serving as SIC to complete SIC familiarization training for the specific type of aircraft for which SIC privileges are sought within the 12 calendar months preceding the month of the flight.[72] The SIC familiarization training consists of two components. First, the person must become familiar with certain information for the specific type aircraft including operational procedures applicable to the powerplant, equipment, and systems; performance specifications and limitations; normal, abnormal, and emergency operating procedures; flight manual; and placards and markings. Second, the person must perform and log pilot time in the type of aircraft that includes three takeoffs and three landings to a full stop as the sole manipulator of the flight controls, engine-out procedures and maneuvering with an engine out while executing the duties of PIC, and crew resource management training.

This preamble explains why the qualification requirements of § 61.55 would ensure that a pilot is qualified to act as SIC of a powered-lift under part 91 (excluding operations conducted under subpart K of part 91), provided the person has passed at least the private pilot practical test in a powered-lift that is capable of performing all the tasks required by the applicable ACS.[73] The preamble also discusses the SIC pilot type rating that is required for international operations.

---

[71] Section V.G of this preamble discusses the FAA's proposal to allow a pilot to obtain a powered-lift type rating and category rating without an instrument rating. In that circumstance, a "VFR only" limitation would be added to the pilot certificate, and the pilot could serve as SIC in VFR operations only.

[72] The familiarization training required in § 61.55(b) does not apply to a person who is designated and qualified as PIC or SIC under subpart K of part 91 (Fractional Ownership Operations). Rather, those pilots may satisfy the training required by that subpart to serve in fractional ownership operations in lieu of the familiarization training.

[73] As explained in section V.G. of this preamble, certain powered-lift designs may be precluded from performing a task required by the applicable Powered-Lift Category ACS. When this occurs, the proposed

1. SIC Qualification Requirements

The FAA has imposed qualification requirements on persons seeking to serve as SIC of certain aircraft since 1972.[74] In fact, the requirement for an SIC to hold at least a private pilot certificate with the appropriate ratings and an instrument rating if the flight is conducted under IFR has remained unchanged since that time. Additionally, the SIC familiarization training requirements, which were also adopted in 1972, have been slightly expanded to include additional information and procedures[75] but otherwise remain unchanged. The FAA adopted the SIC qualification requirements in part 61 in recognition of the tremendous growth of part 91 operations and the introduction of more sophisticated aircraft to this large segment of aviation.[76] The FAA intended for the SIC qualification requirements to ensure that sufficiently qualified pilots occupy both flight crewmember positions.[77]

The SIC qualification requirements of § 61.55 apply to persons seeking to serve as SIC of an aircraft type-certificated for more than one required pilot flight crewmember or in operations requiring a SIC pilot flight crewmember. As such, this requirement

---

rule language in proposed § 194.207 of this SFAR would enable an examiner to waive the task on the practical test. Thus, a person may obtain a powered-lift category rating on their pilot certificate without being required to perform all the tasks specified in the ACS. This person may then seek to serve as SIC of a powered-lift type that is capable of performing the task for which the pilot was never trained or tested. Section V.G of this preamble discusses this issue in detail and proposes to require additional training and an endorsement to ensure all persons seeking to serve as SIC of a powered-lift have all been trained and found proficient on the tasks required in the applicable Powered-Lift Category ACS.

[74] Large and Turbine-Powered Multiengine Airplanes, Final Rule, 37 FR 14759 (Jul. 25, 1972). The SIC requirements were proposed as 14 CFR 61.47b but adopted in the final rule as 14 CFR 61.46 and were applicable to persons seeking to serve as SIC of a large or turbojet-powered multiengine airplane type-certificated for more than one required pilot flight crewmember. In 1973, the FAA relocated 14 CFR 61.46 to 14 CFR 61.55, as it is currently situated today.

[75] See 51 FR 40692 (Nov. 7, 1986) (applying SIC requirements to all aircraft type-certificated for more than one pilot and adding "approved flight manual material, placards, and markings" to the type specific information with which the pilot must become familiar); see also 62 FR 16220 (Apr. 4, 1997) (adding "crew resource management training" to time that must be performed and logged).

[76] Second-In-Command Qualifications and Pilot-In-Command Proficiency Checks, NPRM, 36 FR 5247 (Mar. 19, 1971). Second-In-Command Qualifications and Pilot-In-Command Proficiency Checks, supplemental notice of proposed rulemaking (SNPRM), 36 FR 11865 (Jun. 16, 1971). In adopting SIC qualification requirements in part 61 for persons serving as SIC in part 91 operations, the FAA also considered the improved safety record in part 121 operations, which stemmed from a modern system of pilot training and qualification for part 121 certificate holders.

[77] Id.

without a regulatory amendment will apply to SICs of any powered-lift that is type-certificated for more than one required pilot flight crewmember. Additionally, the requirements of § 61.55 would apply during operations that require more than one pilot flightcrew member by regulation.[78]

Despite proposing to require the PIC to hold a type rating, the FAA has determined that, with the exception of the unique scenario when a powered-lift is not capable of performing all required ACS tasks as discussed in section V.G of this preamble, there is no need to impose requirements beyond those contained in § 61.55 for persons seeking to serve as SIC of a powered-lift, which have been deemed sufficient for other categories of aircraft for over 50 years.[79] As such, a person seeking to serve as SIC will hold the appropriate powered-lift ratings on their pilot certificate and complete familiarization training in the specific type of powered-lift for which SIC privileges are sought.

The requirements of § 61.55(a) ensure that the SIC has obtained experience in the powered-lift category and successfully passed a practical test to obtain the powered-lift rating. The FAA recognizes that this experience may be in a different type of powered-lift than the powered-lift for which SIC privileges are sought. For a pilot who has passed the practical test in a powered-lift that is capable of performing all the tasks required by the ACS, the FAA finds that the existing SIC familiarization training would ensure that the person seeking to act as SIC becomes familiar with and gains sufficient experience operating the specific type of powered-lift before acting as SIC of that aircraft.[80]

Pursuant to § 61.55(b)(1), the person seeking to serve as SIC of a powered-lift would be required to become familiar with information for the specific type of powered-

---

[78] See §§ 91.189, 135.99, 135.101, and 135.111 and subpart K of part 91.

[79] Large and Turbine-Powered Multiengine Airplanes, Final Rule, 37 FR 14759 (Jul. 25, 1972).

[80] For a pilot who was not required to demonstrate proficiency of each task required by the applicable Powered-Lift Category ACS, section V.G of this preamble discusses the proposed training and endorsement requirements that would apply.

lift for which SIC privileges are sought, including the operational procedures applicable to the powerplant, equipment, and systems; performance specifications and limitations; normal, abnormal, and emergency operating procedures; flight manual; and placards and markings. Additionally, pursuant to § 61.55(b)(2), the person seeking SIC privileges for a powered-lift would be required to log pilot time in the type of powered-lift[81] that includes the performance of three takeoffs and landings to a full stop as the sole manipulator of the flight controls, engine-out procedures and maneuvering with an engine out while executing the duties of PIC, and crew resource management training. Therefore, while the person seeking SIC privileges would hold only a powered-lift category rating, a person would become familiar with the unique operating characteristics of the specific type of powered-lift prior to serving as SIC of the powered-lift. Additionally, the SIC familiarization training requirements of § 61.55(b) serve as recency of experience requirements in that they require a person to accomplish the familiarization training specified in § 61.55(b)(1) and (2) in the specific type of aircraft within the 12 calendar months preceding the month of the flight. This requirement would ensure that the SIC of a powered-lift has recent experience handling the flight controls of the powered-lift for which the SIC privileges are sought.

Further, the FAA considered the role of a PIC versus a SIC in part 91 operations, the FAA has determined that it would be unnecessary to hold the SIC of a powered-lift to the same training and testing standards as the PIC of a powered-lift. While a person serving as SIC of a powered-lift may manipulate the controls of the powered-lift during an operation, the PIC, who would hold a type rating and would have demonstrated mastery of the specific type of powered-lift, remains directly responsible for, and is the

[81] The FAA notes that § 61.55(b)(2) permits the individual to perform and log pilot time in a flight simulator that represents the type of aircraft for which SIC privileges are requested.

final authority as to the operation of, that powered-lift.[82] Thus, as with other categories of aircraft, the PIC would have the ability to take over the flight controls at any point during the flight.

For the reasons discussed above, with the exception of the situation discussed in section V.G of this preamble, the FAA has determined that the existing SIC qualification requirements of § 61.55(a) and (b) ensure that the person serving as SIC of a powered-lift in part 91 operations (excluding operations conducted under subpart K of part 91) is sufficiently qualified to act as SIC. Accordingly, this proposed rule would not require the SIC of a powered-lift to hold a type rating for the powered-lift.

As for the initial cadre[83] of pilots who may serve as SIC of a powered-lift, § 61.55(a) requires the person seeking SIC privileges to hold at least a private pilot certificate with appropriate ratings (i.e., powered-lift category rating) and, if the flight will be conducted under IFR, to hold an appropriate instrument rating (i.e., instrument-powered-lift rating). As previously discussed in section V.B of this preamble, current or former military pilots of powered-lift may obtain commercial pilot certificates with powered-lift category ratings as well as instrument-powered-lift ratings pursuant to § 61.73(a) and (b) based on their military pilot qualifications. These military pilots may be qualified to serve as SIC of powered-lift without first obtaining a type rating for the type of powered-lift, provided they satisfy the applicable requirements of § 61.55. Additionally, pilots who obtain a commercial pilot certificate with a powered-lift category rating, an instrument-powered-lift rating, and a type rating pursuant to the alternate pathway proposed in the SFAR may be qualified to serve as SIC of any

---

[82] A PIC has final authority and responsibility for the operation and safety of the flight per the definition of PIC contained at § 1.1. See also 14 CFR 91.3(a), Responsibility and authority of the pilot in command.
[83] The FAA uses the term "initial cadre" throughout this preamble. In some instances, initial cadre refers to a sufficient number of instructors and evaluators to train and qualify pilots for powered-lift ratings under an approved training program under part 135, 141, or 142. In other instances, the term refers to a sufficient number of pilots who are rated in powered-lift.

powered-lift, provided the applicable requirements of § 61.55 are met for the powered-lift in which they will serve as SIC.

2. SIC Pilot Type Rating

As previously discussed, § 61.55 provides for the issuance of a SIC pilot type rating, which is required unless the flight will be conducted as domestic flight operations within the U.S. airspace. The FAA established the SIC pilot type rating and associated qualifying procedures in 2005[84] to conform the FAA pilot type rating requirements to the ICAO pilot type rating standards.[85] The FAA intended for the SIC pilot type rating requirements in § 61.55 to allow U.S. flight crews to operate in international airspace.

The FAA codified two procedures for obtaining the SIC pilot type rating. Under § 61.55(d), a pilot who satisfactorily completes the SIC familiarization training requirements of § 61.55(b) may apply for and receive a pilot rating for SIC privileges in the particular aircraft type, provided the training was completed within the 12 calendar months before the month of SIC pilot type rating application. Additionally, under § 61.55(e), a pilot who satisfactorily completes an approved SIC training program, proficiency check, or competency check under subpart K of part 91 or under parts 125 or 135 may apply for and receive a pilot type rating for SIC privileges in the particular aircraft type, provided the training was completed within the 12 calendar months before the month of SIC pilot type rating application.

The SIC pilot type rating requirements set forth by § 61.55(d) and (e) are necessary for U.S. flight crews to operate powered-lift in international airspace. Therefore, the current SIC pilot type rating requirements of § 61.55 will apply to persons seeking SIC privileges in a powered-lift.

---

[84] Second-in-Command Pilot Type Rating, Final Rule, 70 FR 45264 (Aug. 4, 2005). This revision did not change the qualification requirements to serve as SIC; rather, the revision was primarily intended to conform U.S. SIC qualification requirements under § 61.55 to the ICAO standards under Annex 1 of the Convention on International Civil Aviation.

[85] See ICAO Annex 1, paragraphs 2.1.3.2, 2.1.4.1.b, and 2.1.4.1.1.

D. Supervised Operating Experience Requirements of § 61.64

Section 61.64 addresses the use and limitations of full flight simulators (FFSs) and FTDs for training or any portion of a practical test for certificates and ratings, including aircraft type ratings. As discussed in section IV.C, there are currently no FSTD representing powered-lift that have been qualified under part 60. The FAA anticipates, however, that a powered-lift FSTD could obtain qualification under proposed § 194.105 within the 10-year period that the SFAR would be effective. As such, the FAA has evaluated the requirements in § 61.64 and is proposing changes.

Pursuant to § 61.64(a), an applicant for an aircraft type rating may use an FFS for training and testing, provided the FFS meets certain requirements. Section 61.64(a)(1) requires the FFS to represent the category, class, and type of aircraft for the rating sought.[86] Section 61.64(a)(2) requires the FFS to be qualified and approved by the Administrator and used in accordance with an approved course of training under part 141 or 142, or under part 121 or 135 if the applicant is a pilot employee of that air carrier operator.

Under § 61.64, an applicant for an aircraft type rating may accomplish the entire practical test (except for preflight inspection) in a Level C or higher FFS, the qualification of which is governed by 14 CFR part 60. However, to ensure the applicant has sufficient experience operating the aircraft prior to serving as PIC of that aircraft, § 61.64 requires the applicant to satisfy one of the aeronautical experience requirements set forth in § 61.64(b)(1) through (5) for turbojet airplanes, (c)(1) through (5) for turbo-propeller airplanes, (d)(1) through (4) for helicopters, or (e)(1) through (4) for powered-lift, as appropriate to the type rating sought. If the applicant meets one of the aeronautical experience requirements set forth in § 61.64(b), (c), (d), or (e), as appropriate to the type

[86] The FAA recognizes that "class" is not applicable to powered-lift, as proposed. Section I.H. of this preamble discusses the FAA's proposal to update various references to category and class to ensure each reference appropriately accounts for powered-lift.

rating sought, then the applicant receives a type rating without limitation. If the applicant does not satisfy one of the aeronautical experience requirements, then the applicant receives a PIC limitation on the applicant's pilot certificate in accordance with § 61.64(f)(2).[87] The PIC limitation restricts the applicant from serving as PIC in the type of aircraft for which the applicant has obtained a type rating until the limitation is removed from the pilot certificate by completing the SOE requirements set forth in § 61.64(g). Specifically, the applicant must perform 25 hours of flight time in an aircraft of the category, class, and type for which the limitation applies under the direct observation of a qualified PIC who holds the appropriate ratings, without limitations, for the aircraft.[88] The applicant must obtain this SOE while performing the duties of PIC.[89]

The FAA has long required SOE for newly rated pilots who used FFS to accomplish the training and testing required for the new rating. The SOE requirements in part 61 originated from exemptions that the FAA issued in the 1990s.[90] In those exemptions, the FAA permitted applicants to exclusively use FFS for training and checking, provided the applicants met certain experience requirements specified in the conditions and limitations of the exemption. Applicants who met the experience requirements in an aircraft were entitled to a pilot certificate without limitation. For applicants who met only half of the prerequisite experience, the FAA permitted the issuance of a certificate with a limitation that restricted PIC privileges in the aircraft until the applicant accomplished 15 hours of SOE in the actual aircraft. In subsequent exemptions, the FAA extended the use of FFS to a greater number of pilots by permitting

---

[87] Section 61.64(f)(1) provides an alternative to the PIC limitation specified in § 61.64(f)(2). Under § 61.64(f)(1), an applicant may obtain a type rating, without limitation, by completing the following tasks on the practical test in an aircraft appropriate to category, class, and type for the rating sought: preflight inspection, normal takeoff, normal instrument landing system approach, missed approach, and normal landing.

[88] 14 CFR 61.64(g)(1).

[89] 14 CFR 61.64(g)(3). Additionally, § 61.64(g)(2) requires the applicant to log each flight and the PIC who observed the flight to attest in writing to each flight. To have the limitation removed, the applicant must present evidence of the SOE to any examiner or Flight Standards office pursuant to § 61.64(g)(4).

[90] Exemption Nos. 3931E, 5158, 5169, 4652B.

pilots to satisfy 25 hours of SOE in lieu of meeting the experience requirements in an aircraft.[91] The FAA stated that the 25 hours of SOE paralleled the initial operating experience (IOE) requirements of § 121.434.

In 1992, the FAA issued an NPRM that proposed to increase the use of FFS and FTDs by persons other than air carrier certificate holders and reduce the number of exemption petitions seeking to use FFS for part 61 training.[92] Specifically, the FAA proposed to permit an applicant seeking an additional rating to obtain the training for that rating in an FFS or FTD, provided the training was given in an approved course conducted by a part 142 certificated training center.[93] The FAA explained that it had permitted this practice for years pursuant to exemptions,[94] and the training had proven to be effective.[95] However, at that time, the FAA did not propose to require applicants to perform any SOE after obtaining the additional aircraft rating in the FFS or FTD.

In response to that proposal, the FAA received several comments pertaining to the importance of actual aircraft flight experience.[96] The National Transportation Safety Board (NTSB) acknowledged the limitations to simulation and stated that the proposed regulations must be sensitive to the safety needs served by retaining some aspects of actual flight experience. The NTSB explained that experience in training devices cannot fully replicate operational experience in the actual flight environment and the "seasoning" that such experience provides. The NTSB urged the FAA to review the proposed regulations to ensure that they achieve the intent while still safeguarding basic pilot and instructor skills provided by the physical operating environment. Similarly, the

---

[91] Exemption Nos. 5232D, 5988.
[92] Aircraft Flight Simulator Use in Pilot Training, Testing, and Checking and at Training Centers, NPRM, 57 FR 35888 (Aug. 11, 1992).
[93] Id., at 35894.
[94] At the time of the 1992 NPRM, there were 32 exemption holders that were permitted to use flight simulators to satisfy part 61 training and checking requirements. Id., at 35888.
[95] Id., at 35894.
[96] Aircraft Flight Simulator Use in Pilot Training, Testing, and Checking and at Training Centers, Final Rule, 61 FR 34508, 34522 (Jul. 2, 1996).

Air Line Pilots Association (ALPA) supported increased use of advanced simulation but cautioned against relying too heavily on simulator training in a pilot's early years and experience due to important safety factors. ALPA stated that one factor is a pilot's familiarity with and management of the air traffic control (ATC) environment, specifically the operation, decision-making experience, and interaction with other aircraft.

In the subsequent 1996 final rule,[97] the FAA agreed with the commenters' analysis of the importance of actual aircraft experience when an applicant uses flight simulation for a large portion of required training and testing. The FAA explained that, for years, it had mechanisms for part 121 air carriers and for operators under parts 91 and 125 to ensure that PICs obtain actual aircraft experience prior to acting as PIC for aircraft requiring a type rating. The FAA referenced the requirement in § 121.434 for a potential ATP-certificated PIC to receive IOE under the supervision of a check pilot. Additionally, the FAA referenced the terms of the exemptions, which imposed SOE requirements similar to those required by § 121.434 on relatively inexperienced pilots who sought to obtain a type rating entirely by training and testing in an FFS for purposes of operating under parts 91 and 125. The FAA determined that it was essential to continue to require newly certificated or rated pilots to accomplish SOE prior to acting as PIC for the first time in the NAS in an aircraft that requires a type rating. As a result, the FAA adopted the first SOE requirements in § 61.64 for persons seeking to use FFS and FTDs to obtain additional aircraft ratings.[98]

Originally, the requirements of § 61.64 applied only to applicants seeking an airplane type rating. However, in 1997, the FAA expanded the regulation to permit applicants to use a Level C or higher FFS to obtain an aircraft type rating in a helicopter

---

[97] Id.

[98] When § 61.64 was adopted in 1996, the requirements therein applied to additional aircraft ratings for other than ATP certificates and for other than use under parts 121 and 135.

or powered-lift.[99] As a result, the FAA added regulatory provisions for helicopter and powered-lift type ratings that largely mirrored the requirements that existed for airplane type ratings. Subsequently, in 2009, the FAA issued a final rule that established 25 hours as the standard for SOE.[100] The FAA explained that 25 hours is an appropriate amount of time to ensure a pilot's qualifications.

As discussed in section V.F of this preamble, an applicant for a powered-lift type rating would be required to satisfactorily complete the training and testing for a type rating under an approved training program at a part 141 pilot school, a part 142 training center, or a part 135 operator. Upon completing the approved training program, the applicant may accomplish the practical test in an FFS. The requirements of § 61.64 would, therefore, be applicable. Upon consideration of the current requirements in § 61.64 and their applicability to applicants seeking a powered-lift type rating, the FAA finds it necessary to: (1) propose an amendment to § 61.64(e) that would require SOE for all powered-lift type rating applicants who do not have 500 hours of flight time in the powered-lift for which they are seeking a type rating; and (2) explain the FAA's expectations for the powered-lift that newly rated pilots would use to perform their SOE. Each of these items are subsequently discussed in detail.

Currently, under § 61.64(e), an applicant may accomplish the entire practical test for a powered-lift type rating in a Level C or higher FFS and obtain the powered-lift type rating without a PIC limitation on their pilot certificate if the applicant satisfies one of the experience requirements set forth in § 61.64(e)(1) through (4). Section 61.64(e) contains the following options to meet the experience requirement: (1) hold a type rating in a

---

[99] In 1997, the FAA consolidated the requirements of § 61.64 into § 61.63, which was revised and reorganized for clarity. 62 FR 16220, 16254.

[100] Pilot, Flight Instructor, and Pilot School Certification, Final Rule, 74 FR 42500, 42522 (Aug. 21, 2009). The 2009 final rule removed the regulatory provisions that permitted a newly rated pilot to remove the PIC limitation on their certificate by satisfying certain experience requirements and accomplishing only 15 hours of SOE. Additionally, the 2009 final rule added new § 61.64 to contain all use and limitation requirements for FFS and FTD. Thus, the requirements that were previously found in § 61.63(e), (f), and (g) (for other than ATP certification) were relocated to new § 61.64.

powered-lift without an SOE limitation; (2) have been appointed by the U.S. Armed Forces as PIC of a powered-lift; (3) have 500 hours of flight time in the type of powered-lift for which the rating is sought; or (4) have 1,000 hours of flight time in two different types of powered-lift. An applicant who does not satisfy one of these experience requirements must perform 25 hours of SOE in a powered-lift of the type for which the limitation applies under the direct observation of a qualified PIC prior to serving as PIC of the powered-lift.

The FAA recognizes the significant advancements in flight simulation technology that have contributed to the levels of realism experienced in simulation today. Additionally, the FAA has long recognized that the use of simulation in flight training provides an opportunity to train, practice, and demonstrate proficiency in a safe, controlled environment. For example, this environment enables comprehensive and in-depth training for the efficient application of critical emergency procedures. It is important to emphasize, however, that as powered-lift are coming to the civilian market for the first time, the only pilots with powered-lift experience are military pilots and test pilots, and there is a lack of commonality in the operating characteristics between types of powered-lift. Therefore, while applicants for a powered-lift type rating may accomplish their training and testing in FFS under an approved training program,[101] the FAA has determined that applicants must have sufficient experience operating the powered-lift for which a type rating is sought in the actual flight environment prior to acting as PIC of the aircraft for the first time in the NAS. To this end, the FAA has evaluated the current provisions in § 61.64(e) to ascertain whether an applicant who meets one of these requirements would have sufficient, transferable experience operating an actual powered-lift such that SOE in the powered-lift for which a type rating is sought would be unnecessary.

[101] 14 CFR 61.64(a)(2).

The experience requirements in § 61.64(e) were adopted in 1997 when the FAA added the powered-lift category to part 61. Therefore, several of the experience requirements for powered-lift type rating applicants are category-specific rather than class-specific, as class ratings do not exist for powered-lift. Upon comparing the experience requirements for powered-lift type rating applicants in § 61.64(e) to those experience requirements for airplane and helicopter type rating applicants in § 61.64(b), (c), and (d), the FAA finds that the category-specific experience requirements for powered-lift type ratings in § 61.64(e)(1), (2), and (4) do not achieve the same objective as the class-specific experience requirements for airplane and helicopter type ratings in § 61.64(b)(1) through (3); (c)(1) through (3); and (d)(1), (2), and (4), as subsequently discussed.

Section 61.64(e)(1) allows an applicant for a powered-lift type rating to receive a type rating without limitation if the applicant already holds a type rating in a powered-lift without a SOE limitation.[102] While this resembles the requirements in § 61.64(b)(1), (c)(1), and (d)(1), it does not achieve the same objective as those requirements. Specifically, § 61.64(e)(1) permits the applicant to hold a type rating in any powered-lift. This differs from § 61.64(b)(1), (c)(1), and (d)(1), which are tethered to commonalities between classes of aircraft (i.e., paragraph (b)(1) requires the applicant to hold a type rating in a turbojet airplane of the same class of airplane; paragraph (c)(1) requires the applicant to hold a type rating in a turbo-propeller airplane of the same class of airplane; and paragraph (d)(1) requires the applicant to hold a type rating in a helicopter, which is a class of rotorcraft). Thus, the experience requirements in § 61.64(b)(1), (c)(1), and (d)(1) ensure the applicant for an airplane or helicopter type rating holds a type rating for an aircraft that shares similar operating characteristics as the aircraft for which an additional type rating is sought. By contrast, the experience requirement for powered-lift in

[102] The "SOE limitation" in current § 61.64(e)(1) refers to the PIC limitation specified in § 61.64(f)(2).

§ 61.64(e)(1) permits an applicant to forgo SOE in the powered-lift for which the type rating is sought if the applicant holds a type rating in the general powered-lift category, which may include powered-lift that vary significantly in design, handling, and operating characteristics.

Section 61.64(e)(2) permits an applicant for a powered-lift type rating to receive a type rating without limitation if the applicant has been appointed by the U.S. Armed Forces as PIC of a powered-lift. While this requirement appears to parallel the requirements in § 61.64(b)(3), (c)(3), and (d)(2), it differs from those requirements because it permits the military pilot to be qualified as PIC of any type of powered-lift rather than a powered-lift that shares similar operating characteristics with the powered-lift for which a type rating is sought (i.e., a class of aircraft as promulgated in paragraphs (b)(3), (c)(3), and (d)(2)). The FAA recognizes that military pilots who are qualified to act as PIC of military powered-lift have undergone rigorous training and have a significant amount of flight time operating military powered-lift in complex environments. As explained in section V.B of this preamble, the U.S. Armed Forces have trained military pilots to operate military-specific powered-lift, such as the Bell-Boeing V-22 Osprey, McDonald-Douglas AV-8 Harrier, and F-35B STOVL. These military pilots may qualify for a powered-lift category rating based on military competency in accordance with § 61.73.[103] However, as discussed in section V.B of this preamble, the FAA finds that the experience a military pilot has obtained while operating powered-lift in the U.S. Armed Forces may not ensure the pilot has the knowledge and skills necessary to handle the unique flight qualities of the civil powered-lift for which a type rating is sought in the civil operating environment.

[103] As explained in section V.B of this preamble, these pilots would still be required to obtain a powered-lift type rating to operate a civil powered-lift.

Under § 61.64(e)(4), an applicant for a powered-lift type rating may obtain the type rating without a PIC limitation if the applicant has 1,000 hours of flight time in two different types of powered-lift. While this requirement appears to mirror the requirements for airplane and helicopter type ratings in § 61.64(b)(2), (c)(2), and (d)(4), it does not achieve the same objective as those requirements because, again, it is category-specific rather than class-specific. The 1,000 hours of experience in § 61.64(b)(2), (c)(2), and (d)(4) must be obtained in the same category and class of aircraft, whereas the 1,000 hours of experience in § 61.64(e)(4) must be obtained in the same category of aircraft only (i.e., any powered-lift). Requiring 1,000 hours in two different types of powered-lift, which the FAA again emphasizes may drastically differ in operating characteristics, may not ensure that an applicant for a powered-lift type rating will have flight time handling the unique flight qualities of the powered-lift for which a type rating is sought in the actual operating environment.

In sum, the FAA has determined that broad experience obtained in the powered-lift category should not relieve an applicant for a powered-lift type rating from accomplishing SOE to remove a PIC limitation in the powered-lift for which a type rating is sought. Consistent with the FAA's determinations in the 1996 final rule previously discussed, when an applicant uses flight simulation for a significant portion of the required training and testing, it is important to ensure that the applicant has experience in the actual aircraft prior to acting as PIC of that aircraft. The FAA finds that this is especially important for powered-lift because, as discussed in section V.A of this preamble, powered-lift vary widely in design. Each type of powered-lift can have different configurations, unique inceptors, diversified flight controls, and complicated and distinctive operating characteristics, which makes it infeasible for the FAA to establish classes of powered-lift at this time.

To ensure pilots have experience operating the powered-lift in the actual flight environment prior to serving as PIC of that powered-lift, the FAA is proposing to remove the category-specific experience requirements in § 61.64(e)(1), (2), and (4). Instead, where a powered-lift type rating applicant accomplishes the entire practical test in an FFS and would otherwise satisfy the current experience requirements in those paragraphs, the FAA would require a PIC limitation be placed on their certificate. The pilot would be required to accomplish SOE in the powered-lift under the observation of a qualified PIC to remove the limitation. As the NTSB noted in the 1996 final rule, FFS cannot fully replicate operational experience in the actual flight environment and the "seasoning" that such experience provides.

The only experience requirement in § 61.64(e) that is not category-specific is § 61.64(e)(3). Section 61.64(e)(3) permits an applicant for a powered-lift type rating to receive a type rating without limitation if the applicant has 500 hours of flight time in the type of powered-lift for which the rating is sought. This requirement mirrors the requirements in § 61.64(b)(4), (c)(4), and (d)(3) that apply to applicants seeking a type rating for a turbojet airplane, turbo-propeller airplane, and helicopter. The FAA recognizes that there are currently no type-certificated powered-lift. There are several manufacturers, however, that are pursuing a type certificate (TC) for their powered-lift. To obtain a TC for an aircraft, the manufacturer must apply in accordance with part 21 and show that the aircraft meets the applicable airworthiness requirements.[104] As part of the type certification process, manufacturers of powered-lift must conduct developmental and certification flight tests. To enable this flight testing in a non-type-certificated aircraft, the FAA issues an experimental certificate to the aircraft for certain purposes delineated in § 21.191, such as research and development and to show compliance with

[104] 14 CFR 21.17. Additionally, section IV of this preamble discusses powered-lift type certification in further detail.

the FAA's regulations. The FAA also issues authorizations to the manufacturers' test pilots that allow the test pilots to act as PIC of the aircraft during experimental aircraft operations. Therefore, the only pilots who have significant experience operating the civil powered-lift that are coming to market are the manufacturers' test pilots. Upon analyzing the requirement in current § 61.64(e)(3), the FAA has determined that the manufacturer's test pilots may have at least 500 hours of flight time in the type of powered-lift for which they seek a rating.

The manufacturer's test pilots play a significant role in the development and certification of an aircraft. They are involved in the certification plan for the powered-lift from the earliest days and often have an engineering degree in addition to a pilot certificate. These test pilots that have engineering degrees are generally involved in the manufacturer's design and development of the aircraft's systems and components as well as the flight testing of such. Test pilots conduct both qualitative and quantitative flight tests of an aircraft to evaluate the flight controls, avionics, propulsion, mechanical and electrical systems, and equipment installations. The purpose of an aircraft flight test is to make determinations about an aircraft's performance and flying qualities, to ensure all safety features and redundant systems function as intended, and to operate the aircraft to its limits and beyond to determine the appropriate operating envelope. When issues arise during a flight test, the test pilot often works with the manufacturer to resolve such issues. Because test pilots have intricate knowledge of the aircraft systems, they are able to identify risks and mitigation techniques to ensure product safety. Test pilots are also immersed in authoring material for the aircraft flight manual, including systems descriptions, aircraft limitations, and normal and emergency procedures. Furthermore, test pilots are responsible for performing maintenance checks and post maintenance flight tests on an aircraft.

In light of the key role a test pilot plays in the development and certification of a powered-lift, the FAA finds that a test pilot who has at least 500 hours of flight time in the powered-lift of the type for which they seek a rating will have the knowledge and skills necessary to handle the unique flight qualities of the powered-lift in the actual aircraft. Furthermore, while the majority of the test pilot's duties may involve flight testing and certification activities, these flights are not conducted in a sterile environment. The test pilots are responsible for conducting the aircraft flight tests while also taking care of the operational aspects of the flight, including filing a flight plan, conducting departures and instrument approaches, communicating with ATC, and interacting with other aircraft. Therefore, the FAA has determined that these test pilots will have sufficient experience manipulating the controls of the actual powered-lift in the operational environment of the NAS such that an SOE limitation is unnecessary.

For these reasons, the FAA proposes to retain only the requirement that currently exists in § 61.64(e)(3), which allows applicants for a powered-lift type rating who use an FFS for the practical test to receive the type rating without a PIC limitation on their pilot certificate if they have at least 500 hours of flight time in the type of powered-lift for which they seek a rating. Powered-lift type rating applicants who do not use a powered-lift during the practical test and do not satisfy § 61.64(e)(3) must accomplish SOE in the type of powered-lift for which they obtain a type rating, pursuant to § 61.64(g). This requirement safeguards the knowledge and skills provided by physically operating the aircraft in the flight environment. For example, it would ensure these newly-rated powered-lift pilots obtain experience handling the flight controls of the powered-lift for which they obtain a type rating in a non-sterile operating environment where they must operate the powered-lift while simultaneously making decisions, communicating with ATC, and interacting with other aircraft.

Before the newly rated powered-lift pilots may perform SOE in powered-lift, there must first be a cadre of qualified PICs to directly observe the flight time.[105] These supervising PICs would be considered qualified if they hold a commercial pilot certificate with a powered-lift category rating and a type rating, without limitations. The lack of qualified FSTD for powered-lift means that most initial powered-lift ratings would be accomplished in the aircraft in flight. The proposed alternate pathways to certification in the SFAR would enable persons to obtain powered-lift ratings without a limitation on their commercial pilot certificates by training and testing in a powered-lift. By the time the first groups of pilots seek training and testing entirely in FFS, there will be sufficient numbers of qualified pilots who hold type ratings without limitations for the purpose of observing SOE.

The FAA also notes that an applicant may be qualified to be a PIC without the limitation set forth by § 61.64(f)(2) if, during the practical test, the applicant completes the tasks pursuant to § 61.64(f)(1) in a powered-lift. Specifically, the applicant must complete preflight inspection, normal takeoff, normal instrument landing system approach, missed approach, and normal landing, appropriate to the powered-lift category and type rating sought.

For the reasons previously explained, the FAA is proposing to amend § 61.64(e) by removing the category-specific experience requirements in paragraphs (e)(1), (2), and (4) that enable an applicant for a powered-lift type rating to obtain a type rating without limitation. Because three of the four paragraphs in current paragraph (e) would be removed, the FAA is proposing to consolidate the leading paragraph of current § 61.64(e) with the experience requirement that currently exists in paragraph (e)(3). Therefore, the only applicants for a powered-lift type rating who may forgo SOE after obtaining the type

[105] Pursuant to § 61.64(g)(2), the SOE must be under the direct observation of the PIC who holds a category, class, and type ratings, without limitations, for the aircraft.

rating by completing the entire practical test in a flight simulator and receiving a PIC limitation are those applicants who have at least 500 hours of flight time in the type of powered-lift for which the rating is sought. The FAA also proposes to make a conforming amendment to § 61.64(f) that would remove the cross-references to the experience requirements currently contained in § 61.64(e)(1) through (4).

If the entire practical test (except for preflight inspection) for the proposed powered-lift type rating occurs in a flight simulator, the applicant would receive a type rating with a PIC limitation unless the applicant has at least 500 hours of flight time in the type of powered-lift for which the rating is sought. To remove the PIC limitation, the applicant would be required to perform the SOE required by § 61.64(g). Pursuant to § 61.64(g)(1), an applicant may remove the PIC limitation from their pilot certificate if the applicant performs 25 hours of flight time in a powered-lift of the type for which the limitation applies under the direct observation of a PIC who holds the appropriate ratings without limitations. Section 61.64(g)(3) states that the applicant must obtain this SOE while performing the duties of PIC.[106] Because the applicant has a limitation on their pilot certificate that prohibits the applicant from serving as PIC in an aircraft of that type, the applicant is not acting as PIC of the aircraft during the SOE. As a result, the qualified PIC observing the SOE is acting as PIC of the operation.

Pursuant to § 91.3(a), the PIC of an aircraft is directly responsible for, and is the final authority as to, the operation of the aircraft. Likewise, the definition of PIC in § 1.1 states, in relevant part, that a PIC "has final authority and responsibility for the operation and safety of the flight." Therefore, while the requirements in § 61.64(g) do not expressly

---

[106] The FAA considers a person to be performing the duties of a PIC when the person performs all the functions of the PIC including landings and takeoffs, en route flying, low approaches, and ground functions. See Legal Interpretation to Duncan (Apr. 13, 2012). In the air carrier environment, the FAA generally uses the term "pilot flying," which it defines as "[t]he pilot who is controlling the path of the aircraft at any given time, in flight or on the ground." Advisory Circular 120-71B, Chapter 1, Sec. 1.4.

state that the aircraft used for SOE must have a dual set of controls,[107] it can be inferred from the regulatory requirements that the supervising PIC must have access to controls in the aircraft. Without access to a dual set of controls, the PIC would be unable to act as the person directly responsible for the operation of the aircraft and safety of the flight.

Under the current regulatory framework in part 61, a pilot is required to hold only a powered-lift category rating to operate a powered-lift. As a result, under the current regulations, a manufacturer may develop a powered-lift with a single set of controls with the expectation that a pilot could obtain flight training in a different powered-lift for purposes of meeting the aeronautical experience requirements and obtaining a powered-lift category rating under part 61. Upon obtaining the powered-lift category rating, the pilot would then be qualified to operate a powered-lift that has only one set of controls.

Because the proposed regulations would require the majority of newly-rated powered-lift pilots who use an FFS for the practical test to perform SOE in the powered-lift for which they obtain a type rating, the proposal would result in a different outcome for manufacturers that are developing powered-lift with only one set of controls. To enable the performance of SOE where the applicant is performing the duties of PIC but the PIC observing the flight is acting as PIC of the operation, each powered-lift would be required to have a version of the aircraft that contains fully functioning dual controls. The FAA recognizes that there are manufacturers who are currently seeking type certification of powered-lift that have only one pilot seat and a single set of controls.[108] To comply with the proposal, the FAA expects these manufacturers to develop a version of the

---

[107] Section 91.109(a) requires an aircraft that is being used for flight training to have fully functioning dual controls. However, because the SOE required under § 61.64(g) is not flight training, § 91.109(a) does not apply.

[108] The proposed type rating requirement would likewise present obstacles to powered-lift with single controls. Applicants for powered-lift type ratings would be required under §§ 61.63(d)(2) and 61.157(b) to obtain flight training in the type of powered-lift for the rating sought. Because the applicant would not be rated to act as PIC of the aircraft, the person providing the flight training must act as PIC. Under § 91.109, the aircraft would be required to have a dual set of controls, and the flight instructor as PIC must have access to controls in the aircraft to perform their duties under § 91.3.

aircraft to contain fully functioning dual controls, which is consistent with the FAA's expectations for flight training in airplanes and helicopters that require a type rating.

To the extent powered-lift manufacturers may experience additional compliance costs as a result of this proposal, the FAA notes that it has considered whether there are alternate ways to perform the SOE with only one set of controls in the aircraft. Currently, there is a movement towards Simplified Vehicle Operations (SVO), which is "the use of automation coupled with human factors best practices to reduce the quantity of trained skills and knowledge that the pilot or operator of an aircraft must acquire to operate the system at the required level of operational safety."[109] Some manufacturers are in the process of demonstrating advanced automation technology as part of this movement; however, nothing has been certified yet. As a result, the FAA lacks operational data to analyze whether such technology would safely enable SOE in an aircraft without dual functioning controls. The FAA expects to obtain sufficient data over the duration of the SFAR that could inform a potential rulemaking on this subject.

The requirement for a dual set of controls for flight training in all aircraft originated in 1938.[110] It is a foundational safety regulation applicable to airplanes, helicopters, and powered-lift alike that prevents an inexperienced person from being solely responsible for the manipulation of the flight controls. The same safety rationale for requiring a dual set of controls during flight training applies equally to the SOE scenario for aircraft because the pilot seeking to accomplish SOE holds a limitation that prevents them from acting as PIC until they can demonstrate the ability to perform the duties of PIC in the operational environment under supervision of a fully-rated PIC. While there may be technological advancements in the future that enable the performance

---

[109] GAMA, A Rationale Construct for Simplified Vehicle Operations (SVO), (May 20, 2019).
[110] 14 CFR 20.655 (1938). "Dual controls. No flying instruction shall be given in any aircraft, for or without hire, unless such aircraft is equipped with fully functioning dual controls and a certificated instructor is in full charge of one set of said controls. Such dual controls shall be fully functioning as set forth in § 20.53, except in aircraft manufactured prior to January 1, 1939."

of SOE without a dual set of controls (e.g., virtual SOE), the FAA has determined that it would be premature to codify alternate ways to accomplish SOE in the regulations at this time without a more robust understanding of the safety implications.

E. Establish an Alternate Pathway for Pilot Certification

The introduction of powered-lift as an entirely new category of civil aircraft creates unique challenges for the training and certification of airman. Typically, a person interested in becoming a professional pilot[111] follows an incremental path that builds piloting skills through an iterative series of training with a flight instructor, accumulation of other flight experience, and successful completion of a practical test with a designated examiner. A person generally begins as a student pilot under strict limitations (§ 61.89), obtains a private pilot certificate with limited privileges (§ 61.113), builds flight time as a private pilot, trains and tests for a commercial pilot certificate with expanded privileges (§ 61.133), and finally builds flight time as a commercial pilot toward the hours needed for the ATP certificate, which is necessary to serve as a PIC or SIC in part 121 operations as well as to serve as a PIC in certain part 135 operations.[112]

Under this building block approach, a pilot must meet minimum aeronautical experience requirements at each certificate level that include total time requirements (e.g., 250 total hours to be eligible for a commercial pilot certificate) and subsets of flight time like pilot-in-command time, night time, and cross-country time. In many instances, a portion of this time must be accomplished in the aircraft for the category rating sought. For instance, to apply for a commercial pilot certificate in the airplane category, a person must have 250 hours of flight time as a pilot of which 50 hours must be in airplanes, 50

---

[111] Because the powered-lift that are currently working through the aircraft certification process are largely intended for commercial use, this discussion focuses on the training and certification necessary for those types of operations. The FAA understands that many pilots engage in aviation solely for recreational purposes and may not follow this path to higher certification.
[112] See 14 CFR 135.4(a)(2)(ii)(A), 135.243(a)(1) and (2).

hours must be pilot-in-command time in airplanes, and 10 hours must be pilot-in-command time in cross-country flight in airplanes.

The predominant categories of aircraft (i.e., airplane and rotorcraft) that operate in the NAS today have been in existence for over 80 years. There are currently over 470,000 certificated pilots (other than student pilots) including over 100,000 commercial pilots and 163,000 ATPs. Most importantly, there are over 121,000 certificated flight instructors.[113] These flight instructors form the backbone of the civil airman certification framework. As noted, the only powered-lift pilots and flight instructors with FAA certification have obtained those ratings through the recognition of military competency in § 61.73. Currently, the FAA has certificated 759 powered-lift pilots and 365 powered-lift flight instructors through this process.[114] While these powered-lift pilots and flight instructors form an initial cadre that can serve as pilots in powered-lift operations or provide training to persons seeking powered-lift ratings, it is likely insufficient to meet the upcoming demands.

To add to the challenges, the FAA does not anticipate that the initial powered-lift that obtain type certification will be broadly available for basic airman training and certification at the private pilot level. Rather, manufacturers intend to produce powered-lift for commercial purposes, meaning the initial pilots will be required to hold at least commercial pilot certificates to act as required flightcrew members (i.e., PIC or SIC) for compensation or hire. This situation disrupts the building block approach to flight training and certification that has worked for other categories of aircraft. As there are no civil powered-lift, a person would have difficulty obtaining flight training due to the low

[113] https://www.faa.gov/data_research/aviation_data_statistics/civil_airmen_statistics.
[114] According to the FAA's Airman Certification Branch, these numbers represent the powered-lift airmen certificate holders as of Sep. 21, 2022.

numbers of qualified flight instructors and would not have the necessary flight time in a powered-lift to be eligible for a commercial pilot certificate.[115]

Manufacturers and operators interested in using powered-lift in commercial operations have reached out to the FAA to express concern that the existing aeronautical experience requirements for powered-lift present an insurmountable obstacle to enabling powered-lift operations. The FAA understands the concerns but must find ways to enable operations in powered-lift without adversely affecting safety. The following sections lay out a proposed pathway for pilots to obtain powered-lift ratings through alternate aeronautical experience requirements and expanded logging provisions. The FAA notes that if no alternate aeronautical experience or logging provision is provided under proposed part 194, the person must meet the applicable part 61 requirements, as appropriate.[116]

1. Applicability of Alternate Requirements

Except for the alternate requirements for cross-country discussed later in this section, the FAA proposes to limit the alternate aeronautical experience and logging requirements for obtaining a powered-lift category rating and instrument-powered-lift rating to those persons who already hold at least a commercial pilot certificate with at least an airplane category and single- or multiengine class rating or a rotorcraft category and helicopter class rating.[117] The person would also be required to hold an instrument-airplane or instrument-helicopter rating that corresponds to a category rating held at the

---

[115] The biggest obstacle to obtaining a new category rating at the commercial pilot certificate level is the required PIC time in the category because the only way to log PIC time when a person is not yet rated in the aircraft is as the sole occupant. All other logging requirements for PIC time require the pilot to be rated in the aircraft. When a person obtains a rating at the private pilot level, there is no requirement for PIC time, but a student pilot must accomplish 10 hours of solo flight time, which qualifies as PIC time. At the commercial pilot level, for someone not yet rated in the category of aircraft (i.e., someone adding a new category rating), most of the 50 hours of PIC time required in category must be accomplished as solo flight time. See 14 CFR 61.51(e).

[116] *See* proposed § 194.215(b).

[117] As discussed in this section of this preamble, the FAA is proposing in § 194.237 to provide limited relief from the current cross-country time requirements to private pilots.

commercial pilot certificate level. These prerequisites would be set forth in proposed § 194.215(a).

To obtain a commercial pilot certificate with either airplane class ratings or a helicopter rating, a person must satisfy the aeronautical experience requirements in § 61.129(a), (b), or (c), as appropriate to the ratings sought, pass a knowledge test on the aeronautical knowledge areas specified in § 61.125, and pass a practical test on the areas of operation listed in § 61.127. To pass a practical test for a commercial pilot certificate with appropriate ratings, the applicant must demonstrate mastery of the aircraft by successfully performing each task specified in the areas of operation for the practical test. The applicant is also required to demonstrate proficiency and competency within the approved standards set forth for the commercial pilot certificate level, which are more stringent than the standards set forth for private pilots.[118]

Similarly, to obtain an instrument-airplane or -helicopter rating, the person must satisfy the instrument rating requirements of § 61.65 (as appropriate to the rating sought), which prescribes that the applicant must: obtain certain aeronautical experience, including a significant amount of instrument training; pass a knowledge test on the aeronautical knowledge areas that apply to the instrument rating sought; and pass a practical test on the areas of operation specified in § 61.65(c).

Based on these requirements, a person who already holds a commercial pilot certificate for airplanes or helicopters will have significant flight time[119] and valuable experience operating in the NAS, communicating with ATC, interacting with other air traffic, and acting as PIC of an airplane or helicopter. The proposed applicability requirements would ensure that the pilots taking advantage of the alternate requirements

---

[118] 14 CFR 61.43.

[119] To obtain a commercial pilot certificate with an airplane category and single- or multiengine airplane rating, an applicant must log at least 250 hours of total flight time as a pilot that consists of certain flight time and training requirements. See § 61.129(a) and (b). Similarly, to obtain a commercial pilot certificate with a rotorcraft category and helicopter class rating, an applicant must log at least 150 hours of flight time as a pilot that consists of certain flight time and training requirements. See § 61.129(c).

set forth in the SFAR have significant experience in either an airplane or helicopter and have demonstrated proficiency and competency in either an airplane or helicopter at the commercial pilot level. Furthermore, by requiring these persons to hold an instrument-airplane or -helicopter rating, persons seeking to meet the alternate requirements for a powered-lift category rating would have experience operating an airplane or helicopter under IFR and have demonstrated proficiency on the instrument rating practical test. These prerequisites for the alternate pathway would ensure that the initial cadre of powered-lift pilots have a solid foundational skill set and extensive experience prior to adding powered-lift ratings to their commercial pilot certificate.

2. Obtaining a Powered-lift Category Rating on the Commercial Pilot Certificate (§ 61.129(e))

To obtain a commercial pilot certificate with a powered-lift category rating, a person must satisfy the eligibility requirements for a commercial pilot certificate, which are contained in § 61.123. Section 61.123(f) requires a person to meet the aeronautical experience requirements of § 61.129 that apply to the aircraft category rating sought before applying for the practical test. The aeronautical experience requirements for a person seeking to obtain a commercial pilot certificate with a powered-lift category rating or seeking to add a powered-lift category rating to a commercial pilot certificate are contained in § 61.129(e).[120]

Section 61.129(e) requires a person who applies for a commercial pilot certificate with a powered-lift category rating to log at least 250 hours of total flight time as a pilot which must contain at least the subsets of aeronautical experience specified in § 61.129(e)(1) through (4). Section 61.129(e)(1) through (4) require specific flight time,

[120] Section 61.63(b)(1) states that a person who applies to add a category rating to a pilot certificate, "[m]ust complete the training and have the applicable aeronautical experience." Accordingly, a person seeking to add a powered-lift category rating to a commercial pilot certificate must meet the aeronautical experience requirements of § 61.129(e). See Legal Interpretation to McClellan (2015) (explaining that there is no shortcut available when adding a category rating to an existing certificate).

such as flight time in powered aircraft, flight time in powered-lift, PIC flight time (including a certain amount of PIC time in a powered-lift), cross-country time, flight training time, and solo flight time (or flight time performing the duties of PIC in a powered-lift with an authorized instructor onboard). The FAA established these aeronautical experience requirements for a powered-lift category rating in the 1997 final rule, when the FAA established the powered-lift category in part 61.[121]

At the time the FAA introduced aeronautical experience requirements for the powered-lift category, larger powered-lift were in production. Based on these powered-lift, the FAA decided to codify aeronautical experience requirements for powered-lift that mirrored the aeronautical experience requirements for airplanes. The preamble supporting the 1997 final rule was silent as to why the aeronautical experience requirements for airplanes were more appropriate for powered-lift compared to the aeronautical experience requirements for other categories of aircraft. Since the FAA added the powered-lift category to part 61, several powered-lift are in the type-certification process. The powered-lift currently coming to the civilian market do not align with the aircraft that the FAA anticipated at the time it codified the aeronautical experience requirements for the powered-lift category.[122] Additionally, powered-lift did not flood the civilian market as the FAA anticipated.

Currently, civilian pilots are unable to satisfy many of the aeronautical experience requirements in § 61.129(e) because there are no certificated powered-lift in civil operations in which they can build the necessary flight time. Even when powered-lift category aircraft are introduced to civil aviation, pilots will be unable to satisfy several of

---

[121] Pilot, Flight Instructor, Ground Instructor, and Pilot School Certification Rules, Final Rule, 62 FR 16220 (Apr. 4, 1997).

[122] Powered-lift coming to market today are much different in size, capabilities, range, performance, and propulsion than what was present in 1997. The larger transport category size aircraft at that time differ greatly from powered-lift coming to market today, many of which have electric propulsion concepts, simplified flight controls, and other operational considerations that were not present when the FAA first codified powered-lift in the rule.

the aeronautical experience requirements for a commercial pilot certificate and an instrument rating, such as PIC flight time in powered-lift and cross-country experience in powered-lift. As subsequently discussed in more detail, the logging requirements of § 61.51(e) currently present obstacles for a pilot who is not rated in a powered-lift to log PIC flight time in a powered-lift. Additionally, several powered-lift coming to market are not capable of completing the long-range distances that are currently prescribed for cross-country flights in § 61.129(e)(3) and (4).

The FAA recognizes the need to enable a pathway for a person to obtain a powered-lift category on their commercial pilot certificate. However, because powered-lift are just beginning to enter the market, the FAA lacks the operational data necessary to properly inform a rulemaking that would permanently amend the aeronautical experience requirements in § 61.129(e). The FAA is therefore proposing in part 194 to enable certain applicants for a powered-lift category rating on their commercial pilot certificate to satisfy alternate aeronautical experience and logging requirements. Additionally, the proposed rule would permit the applicant to credit additional time obtained in an FFS towards certain flight time requirements.[123]

This section of the preamble discusses the alternate experience and logging requirements, as applicable, to obtain a powered-lift category rating on a commercial pilot certificate, for (1) test pilots and instructor pilots, (2) the initial cadre of instructors, (3) pilots receiving training under an approved training program, including provisions that would enable certain applicants to credit time obtained in an FFS toward certain flight time requirements. Alternate requirements for cross-country flights are discussed subsequently in this section because they are generally applicable to all applicants for a commercial pilot certificate with a powered-lift category rating. Section E.5.i of this

[123] The FAA notes that part 60 does not currently contain qualification standards for powered-lift FSTDs (i.e., FFSs and FTDs); however, the FAA intends to qualify powered-lift FSTDs in accordance with proposed § 194.105, as discussed in section IV.C of this preamble.

preamble contains tables summarizing the proposed alternate requirements for persons seeking a powered-lift category rating on a commercial pilot certificate.

i. Test Pilots and Instructor Pilots: Alternate Aeronautical Experience and Logging Requirements for a Powered-lift Category Rating

Currently, several manufacturers are pursuing a type certificate for powered-lift, which requires developmental and certification flight tests to establish that the aircraft meets the applicable certification standards.[124] To enable this flight testing in a non-type-certificated aircraft, the FAA issues an experimental certificate to the aircraft for certain purposes, such as for research and development and showing compliance with the FAA's regulations, as discussed in section V.A of this preamble. Powered-lift manufacturers also have instructor pilots who are tasked with developing and validating the training for experimental powered-lift. To enable these training flights, the FAA issues experimental certificates for the purpose of crew training. At this time, the manufacturers' test pilots and instructor pilots are the only pilots who have significant experience operating the civil powered-lift that are coming to market.

As discussed in section V.D of this preamble, the manufacturers' test pilots play a significant role in the development and certification of an aircraft. For example, they are involved in the certification plan for the powered-lift; the manufacturer's design, development, and flight testing of the aircraft's systems and components; and conducting both qualitative and quantitative flight tests for aircraft evaluations. As a result, test pilots have intricate knowledge of the aircraft systems, which enables the test pilot to identify risks and mitigation techniques to ensure product safety. Test pilots are also responsible for authoring certain material for the aircraft flight manual and for performing maintenance checks and post-maintenance flight checks. Furthermore, instructor pilots

[124] See 14 CFR 21.35.

are responsible for developing the manufacturer's training curriculum, which includes the development of training requirements for the aircraft. These duties of a test pilot and instructor pilot establish significant experience in a particular powered-lift and intricate knowledge of the aircraft's systems and components, thereby exceeding the duties of a pilot operating in a normal flight environment. The FAA has determined that it would be beneficial to leverage the experience these pilots have in powered-lift to create an initial cadre of powered-lift pilots.

Accordingly, the FAA is proposing alternate aeronautical experience and logging requirements that would remove certain obstacles that currently preclude a test pilot or instructor pilot from obtaining a powered-lift rating pursuant to § 61.129(e). Each of the proposed alternate requirements are discussed below.

a. *Aeronautical Experience Requirements Concerning Training (§61.129(e)(3))*

Currently, § 61.129(e)(3) requires an applicant for a powered-lift category rating to log at least 20 hours of training from an authorized instructor[125] on the areas of operation listed in § 61.127(b)(5), which include the following: preflight preparation; preflight procedures; airport and heliport[126] operations; hovering maneuvers; takeoffs, landings, and go-arounds; performance maneuvers; navigation; slow flight and stalls;

---

[125] Section 61.1 defines "authorized instructor" as: a person who holds a ground instructor certificate issued under part 61 of this chapter and is in compliance with § 61.217, when conducting ground training in accordance with the privileges and limitations of their ground instructor certificate; a person who holds a flight instructor certificate issued under part 61 and is in compliance with § 61.197, when conducting ground training or flight training in accordance with the privileges and limitations of their flight instructor certificate; or a person authorized by the Administrator to provide ground training or flight training under part 61, 121, 135, or 142 when conducting ground training or flight training in accordance with that authority.

[126] As discussed in section V.I of this preamble, the FAA proposes in this SFAR to extend the definition of heliport in 14 CFR 1.1 as applicable to powered-lift, thereby facilitating the use of heliports as a means for powered-lift take-off and landing.

emergency operations; high-altitude operations; special operations; and post flight procedures.

While the flight experience of a test pilot for a powered-lift manufacturer far exceeds that of a civilian pilot conducting operations in a normal flight environment, the test pilot does not receive flight training in accordance with part 61 as part of their duties performing flight tests required for aircraft certification.[127] Therefore, a test pilot will not obtain the 20 hours of flight training from an authorized instructor that is a prerequisite for applying for a powered-lift rating. However, the manufacturer will have instructor pilots who develop a proposed training curriculum for its experimental powered-lift during the aircraft certification process. These instructor pilots deliver the proposed training curriculum to a pool of pilots as part of its validation process with the FAA's Aircraft Evaluation Division.[128]

In proposed §§ 194.217 and 194.219, the FAA proposes alternate means for test pilots and instructor pilots, respectively, to meet the requirement of 20 hours of training on the areas of operation listed in § 61.127(b)(5) in an experimental powered-lift at the manufacturer. Specifically, the FAA proposes to permit test pilots to satisfactorily complete the manufacturer's proposed training curriculum in the experimental powered-lift with an instructor pilot for the manufacturer rather than with an authorized instructor. As proposed in § 194.217(b)(1), the curriculum would be required to include the 20 hours of training on the areas of operation set forth in § 61.127(b)(5), as required by § 61.129(e)(3). The training would meet the part 61 requirements in all other respects (except as discussed later in this section with regard to cross-country time requirements).

---

[127] The FAA reemphasizes that, for airplanes and helicopters, a test pilot for a manufacturer will hold the necessary certificates and ratings before becoming a test pilot by completing flight training and building flight time through the usual building block approach for certification. The introduction of powered-lift into civil operations creates a unique situation because so few individuals (i.e., military pilots and former military pilots) hold the required ratings.

[128] The manufacturer provides a minimum training program to get initial qualification and issuance of the associated pilot type rating. The FSB evaluates and validates the applicant's training proposal using a standard process that includes multiple 'test subjects' not previously aware of or trained on the new aircraft.

To verify this training, proposed § 194.217(b)(1)(ii) would require the test pilot to receive a logbook or training record endorsement from the instructor pilot certifying that the test pilot satisfactorily completed the training curriculum.[129]

Because the instructor pilots are most familiar with the training curriculum and its development, the FAA finds it is appropriate to allow them to conduct the training required by § 61.129(e) even if they are not authorized instructors as defined in § 1.1. The proposed requirement to allow for the completion of the manufacturer's proposed training curriculum with an instructor pilot would apply to the test pilots as they have a solid foundational knowledge of powered-lift prior to receiving any training from an instructor pilot, and the instructor pilot was responsible for developing the training curriculum. The quality of flight training provided by the instructor pilot combined with the test pilot's previous experience operating the powered-lift for type certification purposes would ensure that there is no adverse impact to safety.

Furthermore, in light of the quality of flight training provided by the instructor pilot who is intimately familiar with the powered-lift and has developed the training for the manufacturer, the FAA is proposing an alternate requirement in § 194.219(b)(1) that would allow the instructor pilot who provides the proposed training curriculum to the test pilot to credit the time providing the training towards § 61.129(e)(3) for purposes of the instructor pilot obtaining a commercial pilot certificate with a powered-lift category rating. To verify to the examiner who will conduct the practical test that the instructor pilot satisfied this alternate experience requirement, the FAA is proposing in § 194.219(b)(1)(ii) to require the instructor pilot to receive an endorsement from a management official within the manufacturer's organization certifying that the instructor

[129] While a test pilot would be required to receive an endorsement from an instructor pilot verifying that the test pilot satisfactorily completed the manufacturer's proposed training curriculum, the test pilot would also be required to receive the endorsement in § 61.123(e). Proposed 194.213(a) would permit instructor pilots to provide the required logbook or training record endorsements under part 61 for a commercial pilot certificate with a powered-lift category rating. Therefore, the endorsement required under § 61.123(e) may be provided by an instructor pilot in lieu of an authorized instructor.

pilot has provided the manufacturer's proposed training curriculum to a test pilot on the areas of operation listed in § 61.127(b)(5). This section subsequently discusses the reasons underlying this proposal, including those regarding prohibition against self-endorsements.

Section 61.129(e)(3)(iv) currently requires that, within the 20 hours of training for a powered-lift category rating, an applicant must log at least 3 hours in a powered-lift with an authorized instructor in preparation for the practical test within the preceding two calendar months from the month of the test. To enable the test pilot (or instructor pilot) to take the practical test after satisfactorily completing (or providing) the manufacturer's proposed training curriculum, the FAA proposes in §§ 194.217(b)(2) and 194.219(b)(2) to permit the preparation for a practical test to be completed with an instructor pilot rather than an authorized instructor, as required by part 61. Because the instructor pilot would deliver the training, the FAA finds that it would be appropriate to permit the instructor pilot to also ensure that test pilot is prepared for the practical test.[130] Additionally, to enable the examiner to verify that the applicant received the preparation for the practical test, the applicant would be required to receive a logbook endorsement under § 61.123(e)(2). As subsequently discussed in this section, the FAA proposes in § 194.213 to allow the applicant to obtain the part 61 logbook or training record endorsement from an instructor pilot certifying that the applicant is prepared for the practical test rather than from an authorized instructor. For the same reasons discussed above, the FAA finds that permitting this flight to take place with an instructor pilot rather than an authorized instructor would not adversely affect safety.

[130] The FAA notes that, while the instructor pilot is providing training to the test pilot rather than receiving training, the instructor pilot would still be required to receive 3 hours of training time in preparation for the commercial pilot practical test. The instructor pilot would receive this training time from another instructor pilot at the manufacturer.

b. *Aeronautical Experience Requirements Involving Time Performing the Duties of PIC in Experimental Powered-Lift (§ 61.129(e)(4))*

Section 61.129(e)(4) currently requires an applicant for a powered-lift category rating to obtain either 10 hours of solo flight time in a powered-lift under an endorsement from an authorized instructor[131] or 10 hours of flight time performing the duties of PIC in a powered-lift with an authorized instructor onboard. Either of these flight times may be credited towards the flight time requirement in § 61.129(e)(2), which requires 100 hours of PIC flight time.[132]

To preserve the option of obtaining solo flight time, the FAA is proposing in §§ 194.217(b)(3) and 194.219(b)(3) to allow test pilots and instructor pilots to obtain the solo endorsement from an instructor pilot in lieu of an authorized instructor. The FAA is also proposing to allow test pilots and instructor pilots to complete the 10 hours of flight time performing the duties of PIC in an experimental powered-lift without an authorized instructor onboard. Instead of the authorized instructor, §§ 194.217(b)(3) and 194.219(b)(3) would require an additional test pilot or instructor pilot to be onboard. The FAA finds that this proposal would not adversely affect safety because both the test pilot and the instructor pilot are authorized by the FAA to act as PIC of the experimental aircraft. Additionally, the test pilot has significant experience acting as PIC of the powered-lift in operations conducted for the purpose of research and development and showing compliance with the regulations. Similarly, the instructor pilot has experience

[131] Under § 61.31(d)(2), to obtain solo flight time, a person must have received training and an endorsement from an authorized instructor.

[132] Of the 100 hours of PIC time required by § 61.129(e)(2), 50 hours must be accomplished in a powered-lift and 50 hours must be accomplished in cross-country flight. Ten hours of the cross-country flight time must be in a powered-lift. 14 CFR 61.129(e)(2)(i), (ii).

acting as PIC of the powered-lift in operations conducted for the purpose of crew training.

c. *Aeronautical Experience Requirements Involving Logging PIC Flight Time (§ 61.129(e)(2))*

Not all manufacturer test pilots or instructor pilots will hold a powered-lift category rating. The aeronautical experience requirement in § 61.129(e)(2)(i) requires an applicant for a powered-lift rating at the commercial pilot certificate level to obtain 50 hours of PIC flight time in powered-lift. Under § 61.51(e)(1), as relevant, a pilot may log PIC time when the pilot is the sole manipulator of the controls of an aircraft for which the pilot is rated (category, class, and type rating, if appropriate), or the sole occupant of an aircraft.[133] The FAA has identified obstacles in each of these logging provisions with respect to test pilots and instructor pilots.

Section 61.51(e)(1)(i) precludes a test pilot from logging PIC flight time in a powered-lift for which the pilot is not rated, even if the test pilot is solely manipulating the controls. Furthermore, while the current regulations permit a test pilot to log PIC flight time when the test pilot is the sole occupant of the aircraft, the test pilot may not be the sole occupant of the powered-lift when the test pilot is conducting operations for research and development or for showing compliance with the regulations.[134]

---

[133] Under § 61.51(e)(1)(iii), a person may log PIC time when acting as PIC of an aircraft for which more than one pilot is required under the type certification of the aircraft or the regulations under which the flight is conducted. Because an experimental aircraft is not type-certificated and is not operated under regulations requiring a second pilot (e.g., § 135.101), this PIC logging provision would not apply to test pilots and instructor pilots. Additionally, under § 61.51(e)(1)(iv), a pilot may log PIC time when the pilot performs the duties of PIC while under the supervision of a qualified PIC, provided certain requirements are met. Because test pilots and instructor pilots would not meet the certification requirements and the training would not be completed under an approved training program, the PIC logging provision of § 61.51(e)(1)(iv) would also not apply to test pilots and instructor pilots.

[134] The "sole occupant" provision is intended to recognize the solo flight time that is required under the aeronautical experience requirements for certificates and ratings. Because student pilots seeking an initial category and class rating or certificated pilots who are adding a new rating to their pilot certificate are not yet rated, this section recognizes this solo time as PIC time without the pilot having to be rated in the aircraft. Section 61.31(d)(2) permits pilots to act as PIC of an aircraft when not rated in the aircraft

Additionally, the powered-lift may require two pilot flightcrew members, in which case the test pilot would not be the only pilot onboard.

As previously discussed at length, test pilots play a key role in the development and certification of a powered-lift. While these pilots may not be rated in a powered-lift, they are authorized by the FAA to act as PIC of the experimental powered-lift and have extensive experience manipulating the controls of the aircraft in operations conducted for research and development and for showing compliance with the regulations. Furthermore, when a test pilot conducts a qualitative or quantitative flight test in the powered-lift, that flight test is not conducted in a sterile environment. Instead, the test pilot is responsible for conducting the aircraft flight tests while also considering the operational aspects of the flight, including filing a flight plan, conducting departures and instrument approaches, communicating with ATC, and interacting with other aircraft.

Upon evaluating the various duties that a test pilot performs, the FAA has determined that certain flight time obtained by these test pilots should count towards the PIC flight time requirement for a powered-lift category rating in § 61.129(e). The FAA is therefore proposing an alternate logging requirement in proposed § 194.217(c) that would permit the test pilots to log PIC flight time for flights when they are the sole manipulator of the controls of the experimental powered-lift despite the fact that they are not rated in the aircraft. The FAA finds that this alternate logging requirement would enable these test pilots to more easily attain the 50 hours of PIC flight time in a powered-lift.

The FAA also proposes an alternate logging requirement for instructor pilots. Under § 61.51(e)(3), a CFI may log PIC flight time for all flight time while serving as the authorized instructor in an operation if the instructor is rated as PIC of that aircraft. Similar to test pilots, instructor pilots for a powered-lift manufacturer may not be

---

provided, they have received the required training that is appropriate to the pilot certification level, aircraft category, class, and type rating (if a class or type rating is required) for the aircraft to be flown and have received an endorsement for solo flight in that aircraft from an authorized instructor.

authorized instructors as defined in FAA regulations and may not hold powered-lift ratings. However, as discussed previously, these instructor pilots are involved in developing, validating, and delivering the manufacturer's proposed training curriculum. Additionally, an instructor pilot is authorized by the FAA to act as PIC of the experimental powered-lift.

Therefore, in light of the instructor pilot's experience with the powered-lift, their involvement with the manufacturer's proposed training curriculum, and their authorization to act as PIC, the alternate logging requirement in proposed § 194.219(c) would permit the instructor pilots to log PIC flight time for flights when they are serving as an instructor pilot for the manufacturer of an experimental powered-lift for which the pilot is not rated. This logging provision would enable these instructor pilots to log PIC flight time for flights when they are providing the proposed training curriculum to the test pilots. This logging provision would also facilitate the instructor pilot's ability to obtain 50 hours of PIC time for purposes of obtaining a powered-lift category rating on their commercial pilot certificate.

The FAA notes that this proposal would permit pilots to log the time that meets the criteria set forth in this SFAR retroactively if the rule becomes final. Flight time that a pilot is currently accruing, and has previously accrued, that meets these conditions may be applied towards the 50-hour requirement when the pilot applies to take the practical test.

ii. Initial Cadre Instructors: Alternate Aeronautical Experience and Logging Requirements for Powered-Lift Category Ratings

While the proposed alternate experience and logging requirements for test pilots and instructor pilots would enable those individuals to obtain powered-lift ratings on their pilot certificates, the FAA finds that those alternate requirements alone would be insufficient to develop sufficient personnel to support training in a powered-lift under an approved training program under part 135, 141, or 142. Before an operator under part

135, a pilot school under part 141, or a training center under part 142 may provide an approved training curriculum for a powered-lift, the operator, pilot school, or training center must have persons who are fully qualified under those parts to provide the training.

To serve as a check pilot in an approved part 135 training curriculum, a person must hold the certificates and ratings required to serve as PIC in the aircraft. As discussed in section V.I of this preamble, the FAA is proposing that a person must hold at least a commercial pilot certificate with a powered-lift category rating, instrument-powered-lift rating, and an appropriate type rating for the powered-lift to serve as PIC in part 135. As such, a part 135 check pilot would be required to hold the same ratings as a PIC on their pilot certificate under § 135.337(b)(1). To be designated as an assistant chief instructor or chief instructor for a course of training in a powered-lift under part 141, a person must hold a powered-lift category rating on both their commercial pilot certificate and their flight instructor certificate in addition to holding the type rating on their commercial pilot certificate.[135] Lastly, to instruct in a powered-lift in flight under part 142, a training center instructor must be qualified in accordance with subpart H of part 61, which requires a flight instructor to hold the appropriate category ratings on both their pilot and flight instructor certificates, in addition to holding the type rating on their commercial pilot certificate. To obtain the necessary powered-lift category rating on their pilot certificate, these persons would be required to comply with the aeronautical experience requirements in § 61.129(e).

Persons seeking to provide training under an approved training curriculum in a powered-lift under part 135, 141, or 142 would encounter the same obstacles with the aeronautical experience requirements in § 61.129 as test pilots and instructor pilots at a manufacturer. These regulatory obstacles are further complicated by the challenges associated with creating and building an initial cadre of instructors who are qualified to

[135] 14 CFR 141.35(a)(1), 141.36(a)(1), 141.37(a)(2)(ii).

provide training under part 135, 141, or 142. Because test pilots and instructor pilots would be the first pilots who obtain powered-lift ratings under this SFAR, the FAA proposes to use them to build the initial cadre of instructors who would provide training under approved training programs. Specifically, the FAA proposes to allow certain persons employed by part 135 operators, part 141 pilot schools, and part 142 training centers to receive training in a powered-lift from an instructor pilot at the manufacturer for the purpose of qualifying sufficient personnel to conduct training in a powered-lift in accordance with an approved training program under parts 135, 141, and 142.[136]

The FAA considered permitting any person who meets the qualifications to serve as an authorized instructor under part 135, 141, or 142 to receive training at the manufacturer. However, recognizing the diversity in flight time and experience across such a broad group of instructors, the FAA decided that there were insufficient risk mitigations to ensure an appropriate level of safety would be maintained by permitting such an expansive group of individuals to receive training at the manufacturer in place of the approved training under part 135, 141, or 142. The FAA concluded that, where a manufacturer does not hold an air agency certificate, it is necessary to confine the training population to a more select group of individuals. These individuals should be the most qualified instructors at a part 135 operator, part 141 pilot school, or part 142 training center. Therefore, the FAA is proposing in § 194.221(a) to permit persons who are authorized to serve as initial check pilots, chief instructors, assistant chief instructors, or training center evaluators to receive the training for powered-lift ratings at a manufacturer.

---

[136] As discussed in section V.G of this preamble, certain manufacturers may choose to pursue certification as a part 141 pilot school or part 142 training center to facilitate the flight training of their customers' personnel. This model has been employed by other manufacturers such as Boeing and Airbus. In those cases, the manufacturer would not need to limit its training to the individuals identified in this section. This proposal is intended to facilitate training administered by manufacturers when the manufacturer does not hold an air agency certificate.

Under part 135, check pilots are airmen approved by the FAA who have the appropriate knowledge, training, experience, and demonstrated ability to evaluate and to certify the knowledge and skills of other pilots during competency and instrument proficiency checks. The role of a check pilot is to ensure that the flightcrew member (1) has met competency standards before the check pilot releases the flightcrew member from training and (2) maintains those standards while continuing in line service. A check pilot under part 135 must be knowledgeable in the applicable requirements of parts 61, 91, 110, 119, and 135, other applicable FAA policies, safe operating practices, and the certificate holder's policies and procedures.

For part 141, the FAA is proposing to permit persons who are authorized to serve as initial chief instructors and assistant chief instructors for powered-lift courses to receive training from an instructor pilot at a manufacturer. Consistent with the reasons for selecting check pilots under part 135, the FAA chose these individuals because they would be among the most qualified instructors at the pilot school. Sections 141.35 and 141.36 prescribe the qualification requirements for chief instructors and assistant chief instructors, respectively. Under these regulations, chief instructors and assistant chief instructors must meet PIC recent flight experience requirements of § 61.57; pass a knowledge test on teaching methods, applicable provisions of the "Aeronautical Information Manual," the applicable provisions of parts 61, 91, and 141, and the objectives and course completion standards of the approved training course for which the person seeks to obtain designation; pass a proficiency test on the instructional skills and ability to train students on the flight procedures and maneuvers appropriate to the course; and meet certain PIC flight time and flight training experience requirements. For a course of training leading to a commercial pilot certificate, a chief instructor and assistant chief instructor would be required to have at least 2,000 hours and 1,000 hours of PIC time, respectively. Additionally, the chief instructor and assistant chief instructor would be

required to have significant experience providing flight training. A chief instructor would be required to have flight training experience that consists of at least (1) 3 years and 1,000 flight hours, or (2) 1,500 flight hours. An assistant chief instructor would be required to have flight training experience that consists of at least (1) 1.5 years and a total of 500 flight hours, or (2) 750 flight hours. Furthermore, the responsibilities of a chief instructor, which may be delegated to an assistant chief instructor, include conducting stage checks, end-of-course tests, and flight instructor proficiency checks.[137]

For part 142, the FAA is proposing to permit persons who are authorized to serve as initial training center evaluators (TCE) to receive training for powered-lift ratings from an instructor pilot at a manufacturer. TCEs are airmen who are designated by the FAA in accordance with part 183 to be pilot examiners on behalf of the Administrator. Part 142 outlines the prerequisites, training requirements, operating procedures, and limitations of TCEs. Pursuant to § 142.55(a), a TCE must be approved by the Administrator and meet the instructor qualification and training requirements of subpart C of part 142. Additionally, a TCE must be qualified in each specific curriculum and the associated flight training equipment for which TCE privileges are requested.

At the time an operator, pilot school, or training center sends an individual to the manufacturer for training in a powered-lift, the individual will not be fully qualified as a check pilot, chief instructor, assistant chief instructor, or TCE for powered-lift. The first step to becoming fully qualified is for the person to obtain the appropriate ratings on their pilot certificate. Therefore, the individuals attending the training at the manufacturer will be candidates for their respective positions. The operator, pilot school, or training center would have the discretion in selecting the individuals they wish to send to the manufacturer for training. Given the functions and duties associated with being the first

[137] The flight instructors at a part 141 pilot school must receive an initial proficiency check prior to being assigned instructing duties in an approved training course as well as recurrent proficiency checks every 12 calendar months.

person to provide training under an approved training program, the FAA anticipates that individuals would be selected based on their pilot and flight instructor qualifications and experience, their record as an airman regarding accidents and incidents, their reputation for integrity and dependability within the industry, and their knowledge and skill as it relates to learning how to operate and instruct in a new aircraft.

To ensure an appropriate level of oversight, the FAA is proposing in § 194.221(a) to require these individuals to be authorized by the Administrator.[138] The FAA intends this authorization to be issued in the form of a temporary letter of approval that states the individual is approved as a candidate to serve as an initial cadre check pilot, chief instructor, assistant chief instructor, or TCE for the purpose of establishing sufficient qualified personnel to conduct training with the powered-lift type under an approved training program under part 135, 141, or 142. The FAA notes that, upon receiving training in the powered-lift at the manufacturer, the individual would complete a practical test with an FAA inspector or designee to receive the appropriate powered-lift ratings. The individual could subsequently obtain a powered-lift category rating on their flight instructor certificate in accordance with the current requirements in subpart H of part 61. In accordance with current practice, when the newly rated individual returns to their operator, pilot school, or training center, they would become proficient in the proposed training curriculum under their respective part by providing instruction to other initial cadre check pilots, chief instructors, assistant chief instructors, or TCEs, become fully qualified to serve in their designated function, and receive a permanent letter of approval after becoming fully qualified.

a. Aeronautical Experience Requirements Concerning Training (§ 61.129(e))

[138] See proposed §§ 194.203, 194.213, 194.217, 194.219, 194.221, 194.225, 194.227, and 194.229.

With respect to the alternate experience and logging requirements for these persons, the FAA is proposing alternate requirements that are largely similar to those proposed for test pilots and instructor pilots in that they provide relief from the same obstacles that exist in §§ 61.129(e) and 61.51(e)(1). First, in place of the requirement in § 61.129(e)(3), which requires 20 hours of training on the areas of operation listed in § 61.127(b)(5) from an authorized instructor, the FAA is proposing in § 194.221(b)(1) to permit the individual to satisfactorily complete the manufacturer's training curriculum in the powered-lift. The training curriculum must include 20 hours of flight training on the areas of operation listed in § 61.127(b)(5) and be provided by an instructor pilot at the manufacturer. Additionally, for verification purposes, the individual would be required to receive an endorsement in their logbook or training record from the instructor pilot certifying that the training was completed, pursuant to proposed § 194.221(b)(1)(ii).

The FAA recognizes that these individuals do not have the same extensive experience with the powered-lift as the test pilots. However, at this stage of the process, the powered-lift would be type-certificated, the manufacturer's training curriculum would be validated, and the instructor pilot would be appropriately rated in the powered-lift. Given the knowledge and familiarity an instructor pilot has with a powered-lift type and the manufacturer's training curriculum, the FAA finds that an instructor pilot would be the most knowledgeable and skilled to provide instruction to the initial group of pilots who would serve as the first instructors at a part 135 operator, part 141 pilot school, or part 142 training center.

Additionally, as stated previously, to mitigate risk, the FAA is proposing to narrowly confine the population of persons who may receive training from an instructor pilot at a manufacturer that does not hold an air agency certificate. In light of the qualification requirements for check pilots, chief instructors, assistant chief instructors, and TCEs, which must be met by the individual prior to the individual providing initial

training under an approved training program, the FAA finds that the persons selected would be among the most highly qualified at the operator, pilot school and training center. As a result, the FAA finds that these persons would be the most capable pilots to receive training in the new powered-lift type for the purpose of becoming rated in the aircraft and subsequently initiating training in the aircraft at their certificate holders. Furthermore, requiring the individual to be authorized by the FAA would ensure the FAA has regulatory oversight over the individuals selected, which would further mitigate risk. For the reasons stated above, the FAA finds that temporarily permitting a small population of instructors to receive training from the manufacturer for the purpose of developing sufficient personnel to provide training in powered-lift under parts 135, 141, and 142 would not adversely affect safety.

Second, the aeronautical experience requirement in § 61.129(e)(3) would present the same obstacle for individuals receiving training at the manufacturer from an instructor pilot. As with test pilots and instructor pilots, the person receiving the manufacturer's training from an instructor pilot would not have an authorized instructor, as defined in § 61.1, to provide the flight training in preparation for the practical test. The FAA is therefore proposing in § 194.221(b)(2) to permit the preparation for the practical test to be completed with an instructor pilot rather than an authorized instructor.[139] Consistent with the reasons for proposing the same alternate requirement for test pilots and instructor pilots, which is previously discussed, the FAA finds that it would be appropriate to permit the instructor pilot who provided the training to also ensure that the person is prepared for the practical test. This proposed alternate requirement would enable the person to take the practical test after satisfactorily completing the manufacturer's training curriculum. Because of the instructor pilot's experience with the

[139] To the extent that instructor pilots may hold the necessary certificates and ratings to be an authorized instructor as defined in § 61.1 in a powered-lift, those instructor pilots would be able to provide endorsements without need for the proposed relief.

powered-lift and their involvement with the manufacturer's training curriculum, the FAA finds that temporarily permitting the instructor pilot to replace the authorized instructor specified in § 61.129(e)(3) would not adversely affect safety, especially in light of the small population of pilots who would require this relief.

Third, § 61.129(e)(4) requires an applicant for a powered-lift category rating to obtain either 10 hours of solo flight time in a powered-lift or 10 hours of flight time performing the duties of PIC in a powered-lift with an authorized instructor onboard. Either of these flight times may be credited towards the flight time requirement in § 61.129(e)(2), which requires 100 hours of PIC flight time, of which 50 hours must be in powered-lift. Consistent with the alternate requirements proposed for test pilots and instructor pilots, the FAA is proposing in § 194.221(b)(3) to permit the instructor pilot to replace the authorized instructor in § 61.129(e)(4). For the reasons stated in the previous paragraph, the FAA finds that an instructor pilot is qualified to temporarily serve in this role. Additionally, the FAA finds that any risk to safety would be mitigated by the scope of the relief because the alternate requirement would apply only to those individuals who were authorized by the FAA to serve as an initial check pilot, chief instructor, assistant chief instructor, or TCE for the purpose of initiating training in a powered-lift under part 135, 141, or 142; the temporary nature of the relief; and the qualifications and experience held by the initial cadre of instructors to whom the relief would apply.

b. *Alternate Aeronautical Experience Logging PIC Flight Time (§ 61.129(e)(2))*

The FAA finds that the aeronautical experience requirement in § 61.129(e)(2)(i), which requires 50 hours of PIC flight time in powered-lift, presents an obstacle in light of the PIC logging requirements set forth in § 61.51(e) for the initial cadre of instructors who would train with the manufacturer under this proposal. As discussed, under

§ 61.51(e)(1), as relevant, a pilot may log PIC time when the pilot is the sole manipulator of the controls of an aircraft for which the pilot is rated (category, class, and type rating, if appropriate), or the sole occupant of an aircraft. The initial cadre of instructors who attend training at a manufacturer will not yet be rated in the powered-lift, so they will not be able to log PIC time as sole manipulator of the controls. Additionally, because the majority of the flight time with the manufacturer would consist of training time with an instructor pilot, the person would not be able to log this time as PIC time as the sole occupant of the powered-lift.

To establish the initial cadre of persons who would initiate training in a powered-lift in accordance with an approved training program under part 135, 141, or 142, the FAA is proposing in § 194.221(c) to temporarily permit those persons who would receive training at the manufacturer to log up to 40 hours of PIC flight time towards the 50-hour requirement during flights when the person is the sole manipulator of the controls of the powered-lift for which the person is not rated, provided the person is manipulating the controls of the powered-lift, performing the duties of PIC with an instructor pilot onboard, and the flight is conducted in accordance with the manufacturer's training curriculum.

This proposed alternate logging requirement would enable persons to log 40 hours of PIC flight time for flights when they are obtaining flight training on the areas of operation specified in § 61.127(b)(5). To the extent these pilots would not be held to the same logging provisions required for pilots operating other categories of aircraft, the FAA finds that risk would be mitigated for the same reasons previously discussed. The scope of this relief would be both narrowly applicable and temporary, and the persons who may exercise this alternate logging requirement would be the most qualified and experienced instructors at a part 135 operator, part 141 pilot school, and part 142 training center. The FAA finds that the flight time permitted under the proposed alternate

requirement would be valuable for the purposes of logging PIC flight time for a powered-lift category rating because the pilot would be solely manipulating the controls of the powered-lift, thereby obtaining experience with its flight and handling characteristics, while simultaneously exercising the duties of PIC. By exercising the duties of PIC, the pilot would experience increased responsibilities during the flight (compared to a typical training flight in an aircraft in which they are not yet rated), including heightened decision-making.

The FAA notes that, as proposed, these pilots would still be required to obtain the last 10 hours of PIC flight time as solo flight time under § 61.51(e).[140]

iii. Pilots Receiving Training Under an Approved Training Program

a. *Alternate Requirements for a Commercial Pilot Certificate* with a Powered-lift Category Rating

The PIC logging requirements in § 61.51(e)(1) would also create obstacles for persons seeking to obtain a powered-lift category rating on their commercial pilot certificate outside a manufacturer's training curriculum. Because this is a new category of aircraft that is entering the civilian market, pilots would be unable to log PIC flight time in the powered-lift in accordance with § 61.51(e)(1)(i) because they would not yet be rated in the aircraft. Thus, at the commercial pilot level, a person would have to obtain the 50 hours of PIC time required by § 61.129(e)(2)(i) as the sole occupant of the powered-lift under solo endorsements from an authorized instructor.

To springboard the initial cadre of powered-lift pilots, the FAA is proposing in § 194.221(c) to permit certain applicants for a commercial pilot certificate with a powered-lift category rating to log up to 40 hours of PIC flight time towards the 50-hour

[140] The solo flight endorsement required under § 61.31(d)(2) may be provided by an instructor pilot in lieu of an authorized instructor in accordance with proposed § 194.213(a).

requirement during flights when the pilot is the sole manipulator of the controls of the powered-lift for which the pilot is not rated, provided the applicant is manipulating the controls of the powered-lift, the applicant is performing the duties of PIC with an authorized instructor onboard, and the flight is conducted in accordance with an approved training program under part 135, 141, or 142.[141]

This proposed 40 hours of PIC flight time would be logged when the applicant is obtaining flight training on the areas of operation specified in § 61.127(b)(5) under an approved part 135, 141, or 142 training program. The FAA acknowledges that this proposal relaxes the standards for logging PIC flight time from the standard applied to other categories of aircraft. Given the unique challenges presented by the introduction of powered-lift for commercial operations, the FAA has weighed the safety concerns of a relaxed standard against the need to enable pilot certification and concluded that this proposal appropriately mitigates any risk that may be introduced during the transitional period in which it would be permitted.

Even though the pilots are not rated in a powered-lift, the FAA finds that this flight time would be valuable for purposes of logging PIC flight time for a powered-lift category rating for the same reasons discussed in the previous section. By requiring the flight to be conducted in accordance with an approved training program under part 135, 141, or 142, the FAA would ensure that the pilot is logging alternate PIC time only for those training flights that are conducted in an approved training program environment. The FAA has oversight of training conducted through program approval under parts 135, 141, and 142, and the approved training programs would be monitored and validated to ensure the instructional quality is consistent and the training is effective. The proposed requirement for the flight to be conducted in accordance with an approved training program under part 135, 141, or 142 would serve as a risk mitigation to ensure that the

[141] Training under part 135, 141, or 142 is discussed in more detail in section V.F of this preamble.

proposed alternate PIC logging requirement would not result in an adverse impact to safety.

As with the initial cadre of instructors, an applicant would be required to obtain the remaining 10 hours of PIC time as the sole occupant of the powered-lift under an instructor endorsement.

b. *Use of a Ful*l Flight Simulator for PIC Time for a Commercial Pilot Certificate with a Powered-Lift Category Rating

Currently, § 61.129(i) contains the permitted credit for use of an FFS or FTD in lieu of an aircraft for a commercial pilot certificate. Section 61.129(i)(1) permits an applicant who has not accomplished the training required by § 61.129 in a course conducted by a training center certificated under part 142 to credit a maximum of 50 hours toward the total aeronautical experience requirements of § 61.129 for an airplane or powered-lift rating, or a total of 25 hours toward the total aeronautical experience requirements of § 61.129 for a helicopter rating, provided the aeronautical experience was obtained from an authorized instructor in an FFS or FTD that represents the aircraft.[142] For applicants who have accomplished the training required by § 61.129 in a course conducted by a training center certificated under part 142, § 61.129(i)(2) permits the applicant to credit a maximum of 100 hours toward the total aeronautical experience requirements of § 61.129 for an airplane or powered-lift rating or a total of 50 hours toward the total aeronautical experience requirements of § 61.129 for a helicopter rating, provided the aeronautical experience was obtained from an authorized instructor in an FFS or FTD that represents the aircraft.

[142] The FFS and FTD must represent the class of airplane or powered-lift category and type (see § 61.129(i)(1)(i) and (i)(2)(i)), or helicopter and type (see § 61.129(i)(1)(ii) and (i)(2)(ii)), if applicable, appropriate to the rating sought.

While the regulation currently permits applicants for a commercial pilot certificate with a powered-lift category rating to credit time obtained in an FFS or FTD towards the aeronautical experience requirements of § 61.129(e), the time obtained in an FFS or FTD may be credited only towards the total flight time. To allow for more flexibility and to foster the development of an initial cadre of powered-lift pilots, the FAA has decided to temporarily permit time obtained in a Level C or higher FFS to be credited toward a certain subset of aeronautical experience.

Specifically, the FAA is proposing in § 194.223(d) to permit an applicant for a commercial pilot certificate with a powered-lift category who is accomplishing training under an approved program under part 135, 141, or 142 to credit a maximum of 15 hours obtained in an FFS toward the 50-hour PIC flight time requirement in § 61.129(e)(2)(i), provided the aeronautical experience was obtained performing the duties of PIC in a Level C or higher FFS that represents the powered-lift category. The FAA finds that this provision would not adversely affect safety because the applicant would still be required to obtain 35 hours of PIC flight time in the powered-lift, which aligns with the aeronautical experience requirement in § 61.129(c)(2)(i) for a helicopter rating. While the amount of PIC flight time that would be required in the actual powered-lift would be reduced to 35 hours, most operations in the powered-lift currently seeking type certification are sufficiently similar to helicopter operations in that the flight is of shorter range,[143] which condenses the critical phases of flight[144] and results in an operation during which the pilot is actively engaged in performing the most critical PIC duties to ensure the safety of the flight. Operations in an airplane are generally of longer duration,

---

[143] The FAA notes that this comparison is based on the current type certification projects for powered-lift.
[144] The FAA considers the critical phases of flight to include all ground operations involving taxi, takeoff and landing, and all other flight operations conducted below 10,000 feet, except cruise flight. The FAA emphasizes the importance of operations involving the critical phases of flight. See 14 CFR 121.542(c), 135.100(c) (commonly referred to as the "sterile cockpit rule").

which results in the pilot experiencing less time performing the duties of PIC in the critical phases of flight.

Additionally, in proposed § 194.223(d)(2), the FAA is proposing to permit 15 hours of PIC time in a Level C or higher FFS only for those applicants who are undergoing an approved training program under part 135, 141, or 142. By limiting this credit to applicants who are conducting flights in accordance with an approved training program, the FAA would ensure that the only FFS time that may be credited towards the 50-hour PIC flight time requirement is time acquired in a controlled environment in accordance with a structured curriculum for which the FAA has provided approval and retains continuing oversight.

The FAA finds that permitting the pilot to obtain 15 hours of PIC time in a Level C or higher FFS, provided the flight is conducted in accordance with an approved training program, would enable the pilot to gain experience performing the duties and functions of a PIC in situations that the pilot would not typically encounter while attaining PIC time operating a small aircraft in the NAS. For example, this proposal would enable the pilot to acquire experience performing the duties of PIC, which includes exercising decision-making abilities, during critical emergency procedures that could not otherwise be performed in the aircraft. Furthermore, for the purpose of establishing an initial cadre of powered-lift pilots, these alternate requirements would not adversely affect safety because they would be narrowly focused on a select population of seasoned pilots who already hold commercial pilot certificates and instrument ratings, they would be in effect for a temporary duration, and the requirement for the applicant to pass the commercial pilot practical test in a powered-lift with an FAA inspector or examiner would serve as a safeguard.

The FAA determined that a minimum of Level C FFS is required because these devices provide the highest level of aerodynamic modeling, visual fidelity, and motion

cueing to replicate the powered-lift for motion-based pilot training. The 3-degree-of-freedom motion cues provided by Level A and B devices do not provide the level of fidelity required to meet the flight training objectives as compared to the 6-degree-of-freedom requirements for Level C and higher devices. The use of a Level C or higher FFS is also consistent with § 61.64, which allows a practical test to be completed only in a Level C or higher FFS.

3. Obtaining an Instrument-Powered-lift Rating § 61.65(f)

To obtain an instrument-powered-lift rating, a person must satisfy the aeronautical experience requirements for an instrument-powered-lift rating in § 61.65(f). Section 61.65(f)(1) requires a person who applies for an instrument-powered-lift rating to log at least 50 hours of cross-country time as PIC, 10 of which must be in a powered-lift. Section 61.65(f)(2) requires 40 hours of actual or simulated instrument time in the areas of operation listed under § 61.65(c), of which 15 hours must be received from an authorized instructor who holds an instrument-powered-lift rating. The instrument time must include 3 hours of instrument flight training from an authorized instructor in a powered-lift within 2 calendar months before the date of the instrument rating practical test. Additionally, the instrument time referenced in § 61.65(f)(2) must include instrument flight training on cross-country flight procedures, including one cross-country flight in a powered-lift with an authorized instructor that is performed under IFR, when a flight plan has been filed with an ATC facility. The cross-country flight must include 250 nautical miles along airways or by directed routing from an ATC facility, an instrument approach at each airport, and three different kinds of approaches with the use of navigation systems.

Civilian pilots are unable to satisfy several of the aeronautical experience requirements for an instrument-powered-lift rating for the same reasons as civilian pilots are unable to satisfy certain requirements for a commercial pilot certificate with a

powered-lift rating, as previously discussed. The FAA therefore finds it necessary to enable an alternate pathway for persons to obtain an instrument-powered-lift rating similar to the alternate pathway proposed for powered-lift category ratings at the commercial pilot certificate level. The FAA proposes in § 194.215 to limit the alternate aeronautical experience and logging requirements for obtaining an instrument-powered-lift rating to those persons who already hold at least a commercial pilot certificate with at least an airplane category and single- or multiengine class rating or a rotorcraft category and helicopter class rating. The person would also be required to hold an instrument-airplane or instrument-helicopter that corresponds to the category (airplane) or class rating (helicopter) held at the commercial level.

In addition, consistent with the alternate pathway proposed for the commercial pilot aeronautical experience requirements, the FAA is proposing alternate experience and logging requirements to obtain an instrument-powered-lift rating for (1) test pilots and instructor pilots, (2) the initial cadre of instructors, and (3) pilots receiving training under an approved training program.[145] Alternate requirements for cross-country flights, which are generally applicable, are discussed later in this section. Section E.5.ii of this preamble contains tables summarizing the proposed alternate requirements for an instrument-powered-lift rating.

---

[145] The FAA recognizes that, pursuant to § 91.109(c)(1)(i), to operate a civil aircraft in simulated instrument flight, a safety pilot must occupy the other control seat and possess at least a private pilot certificate with category and class ratings appropriate to the aircraft being flown to operate a civil aircraft. However, because test pilots and instructor pilots may not yet possess the powered-lift category rating to meet this requirement while conducting operations to meet the proposed alternate experience requirements set forth in the SFAR, proposed § 194.311 would except operations conducted to meet the alternate aeronautical experience requirements set forth in proposed §§ 194.225, 194.227, and 194.229 from meeting § 91.109(c)(1)(i). For the reasons explained previously about the depth of knowledge and operating experience of test pilots and instructor pilots, the FAA has determined there would be no adverse impact to safety.

i. Test Pilots and Instructor Pilots: Alternate Aeronautical Experience and Logging Requirements for Instrument-Powered-Lift Rating

Sections 194.225 and 194.227 would contain the alternate aeronautical experience and logging requirements for test pilots and instructor pilots seeking an instrument-powered-lift rating. The FAA is proposing in §§ 194.225(a) and 194.227(a) that these alternate requirements would apply if the flights are conducted in an experimental aircraft at the manufacturer and the test pilots or instructor pilots seeking to take advantage of the alternate requirements are authorized by the Administrator to act as PIC of the experimental powered-lift. The alternate training requirements would be set forth in § 194.225(b)(1) through (4) for test pilots and § 194.227(b)(1) through (4) for instructor pilots. The alternate logging requirements would be set forth in §§ 194.225(c) and 194.227(c). Each of the proposed alternate requirements are discussed below.

a. *Aeronautical Experience Requirements Involving Instrument Training (§ 61.65(f)(2))*

First, the FAA is proposing alternate requirements for test pilots or instructor pilots to accomplish the 15 hours of instrument training on the areas of operation listed in § 61.65(c), as required by § 61.65(f)(2). Under proposed § 194.225(b)(1), a test pilot would be permitted to satisfactorily complete the manufacturer's training curriculum in the experimental powered-lift with an instructor pilot. Similarly, under § 194.227(b)(1), the instructor pilot would be able to credit the time spent providing the manufacturer's training curriculum towards the training required by § 61.65(f)(2). The manufacturer's training curriculum would be required to include 15 hours of instrument training on the areas of operation listed in § 61.65(c).

For the purpose of verifying satisfactory completion of the alternate experience requirement to an examiner, the FAA is proposing to require the test pilot or instructor pilot to receive an endorsement in their logbook or training record. Under proposed § 194.225(b)(1)(ii), a test pilot would be required to receive an endorsement from the instructor pilot who provided the training, certifying that the test pilot satisfactorily completed the manufacturer's training curriculum in the experimental powered-lift. Under proposed § 194.227(b)(1)(ii), an instructor pilot would be required to receive an endorsement from a management official within the manufacturer's organization certifying that the instructor pilot has provided the manufacturer's training curriculum to a test pilot.

Second, the FAA is proposing an alternate requirement to § 61.65(f)(2)(i) that would permit the preparation for the instrument rating practical test to be completed with an instructor pilot rather than an authorized instructor. These requirements set forth in proposed §§ 194.225(b)(2) and 194.227(b)(2) would enable the test pilot or instructor pilot to take the instrument rating practical test after satisfactorily completing three hours of instrument flight training with an instructor pilot in a powered-lift within two calendar months before the date of the practical test. To enable the examiner to verify that the preparation was completed, the applicant would be required to receive a logbook or training record endorsement under § 61.65(a)(6); however, under proposed § 194.213, the applicant may obtain the endorsement from the instructor pilot, who certifies that the applicant is prepared for the practical test.

Third, the FAA is proposing alternate requirements in §§ 194.225(b)(3) and 194.227(b)(3) that would allow test pilots or instructor pilots to perform instrument training on cross-country flight procedures referenced in § 61.65(f)(2)(ii) in an experimental powered-lift with an instructor pilot rather than an authorized instructor. The applicant would also be required to receive a logbook or training record endorsement

from the instructor pilot to certify that the applicant completed the cross-country flight with the instructor pilot. For the same reasons discussed earlier in this section with regard to training for a powered-lift category rating, the FAA finds that permitting the instrument training, the preparation for the practical test, and the cross-country instrument flight to take place with an instructor pilot rather than an authorized instructor would not adversely affect safety.

b. *Aeronautical Experience* Requirements Involving Logging PIC Flight Time (§ 61.65(f)(1))

The FAA recognizes the obstacle with logging PIC time in accordance with § 61.51(e)(1) for the reasons stated previously. These obstacles are relevant to persons seeking an instrument-powered-lift rating because § 61.65(f)(1) requires 10 hours of cross-country time as PIC in a powered-lift. Accordingly, consistent with the alternate logging requirements proposed for persons seeking to add a powered-lift category rating on a commercial pilot certificate, the FAA proposes in §§ 194.225(c) to permit test pilots at the manufacturer to log PIC flight time for the purpose of satisfying the 10-hour cross-country requirement in § 61.65(f)(1) when the test pilot is the sole manipulator of the controls of an experimental powered-lift even if the test pilot is not rated for the aircraft. To log this time, the test pilot would be required to be acting as PIC of the experimental powered-lift in accordance with a letter of authorization issued by the Administrator. In addition, the flight would have to be conducted for the purpose of research and development or showing compliance with the regulations in accordance with the experimental certificate issued to the powered-lift pursuant to § 21.191.

Similarly, the FAA is proposing in § 194.227(c) to allow instructor pilots to log PIC flight time for the purpose of satisfying the 10-hour cross-country requirement in § 61.65(f)(1) when the pilot is serving as an instructor pilot for the manufacturer of an

experimental powered-lift for which the instructor pilot is not rated, provided the pilot is acting as pilot-in-command of the experimental powered-lift in accordance with a letter of authorization issued by the Administrator and the flight is conducted for the purpose of crew training in accordance with the experimental certificate issued to the powered-lift pursuant to § 21.191.

For the reasons provided in the discussion of PIC flight time for powered-lift ratings at the commercial pilot certificate level, the FAA finds that there would be no adverse impact to safety by allowing this time to be logged for instrument-powered-lift ratings.

ii. Initial Cadre Instructors: Alternate Aeronautical Experience and Logging Requirements for Instrument-Powered-Lift Ratings

The FAA is proposing alternate experience and logging requirements for certain requirements in § 61.65(f) that would facilitate initial training and certification of persons who have been authorized to serve as the initial cadre of check pilots, chief instructors, assistant chief instructors and TCEs for the purpose of developing sufficient personnel to provide initial training in powered-lift in accordance with approved training programs under parts 135, 141, and 142. These alternate requirements would apply if the flights are conducted in type-certificated powered-lift at the manufacturer.

a. *Aeronautical Experience Requirements Involving Training (§ 61.65(f))*

As with test pilots, the FAA is proposing in § 194.229(b)(1) to permit these persons to receive the 15 hours of instrument training on the areas of operation listed in § 61.65(c) from an instructor pilot in lieu of an authorized instructor. The instructor pilot would be required to conduct the training in accordance with the manufacturer's training curriculum. These persons would be required to obtain a logbook or training record endorsement from the instructor pilot certifying satisfactory completion of the

manufacturer's training curriculum for the same reasons the test pilot is required to receive such an endorsement.

The FAA is also proposing to permit the instructor pilot to replace the authorized instructor for (1) the 3 hours of instrument flight training in a powered-lift in preparation for the practical test for an instrument-powered-lift rating within 2 calendar months before the date of the practical test in § 61.65(f)(2)(i), set forth by proposed § 194.229(b)(2), and (2) the cross-country flight prescribed by § 61.65(f)(2)(ii), set forth by proposed § 194.229(b)(3). The FAA notes that the person receiving the training at the manufacturer would also be required to obtain an endorsement from the instructor pilot certifying the completion of this cross-country flight. For reasons previously discussed, the FAA finds that there would be no adverse impact on safety by permitting an instructor pilot to temporarily replace the authorized instructor for the purpose of satisfying these alternate experience requirements.

b. *Aeronautical Experience Requirements Involving Logging PIC F*light Time (§ 61.65(f)(1))

The FAA recognizes the obstacle with logging PIC time in accordance with § 61.51(e)(1) for the reasons stated previously. These obstacles are relevant to persons seeking an instrument-powered-lift rating because § 61.65(f)(1) requires 10 hours of cross-country time as PIC in a powered-lift. Accordingly, consistent with the alternate logging requirements proposed for persons seeking to add a powered-lift category rating on a commercial pilot certificate, the FAA is proposing in § 194.229(c) to allow a person receiving training at the manufacturer to log PIC flight time, despite not being rated in the powered-lift, for flights when the person is solely manipulating the controls of the powered-lift with an instructor pilot onboard, is performing the duties of PIC, and the flight is conducted in accordance with the manufacturer's training curriculum for the

powered-lift. The FAA finds that, for this select group of pilots, the risk mitigations discussed earlier in this section with regard to test pilots and instructor pilots would also apply to the proposed alternate logging requirements discussed in this paragraph, thereby resulting in no adverse impact to safety.

iii. Pilots Receiving Training Under an Approved Training Program: Use of a Full Flight Simulator for Instrument Training for an Instrument -Powered-Lift Rating

Because the FAA has proposed alternate pathways for pilots to obtain the experience necessary to be eligible for the initial cadre of instructors, parts 135, 141, and 142 approved training programs will have access to a pool of authorized instructors. Therefore, the FAA does not find it necessary to enable alternate experience requirements for pilots receiving training under an approved training program that substitute instructor or test pilots for authorized instructors. Rather, the only necessary relief for pilots receiving training under an approved training program is that of FSTD credit, as subsequently explained.

With regard to the completion of instrument training in an FSTD, § 61.65(h) currently permits applicants for an instrument rating to credit a certain amount of time in an FFS or FTD towards the instrument time in § 61.65, if the time was accomplished with an authorized instructor. Specifically, an applicant may credit a maximum of 30 hours performed in an FFS or FTD if the instrument time was completed in accordance with part 142. If the instrument time is not completed in accordance with part 142, the applicant may credit a maximum of 20 hours performed in an FFS or FTD. While the regulation currently permits applicants for an instrument-powered-lift rating to credit time obtained in an FFS or FTD, the time may be credited only towards the instrument time specified in § 61.65(f)(2).

The FAA is proposing in § 194.231(c) to temporarily permit a maximum of 4 hours obtained in a Level C or higher FFS to be credited towards the flight time requirement in § 61.65(f)(1), which requires an applicant to obtain 10 hours of cross-

country time as PIC in a powered-lift.[146] The 4 hours must include experience performing the duties of PIC during a simulated cross-country flight in a Level C or higher FFS that represents the powered-lift category and that includes the performance of instrument procedures under simulated instrument conditions. The FAA likewise is proposing in § 194.231(c)(3) to permit 4 hours of PIC cross-country time in a Level C or higher FFS only for those applicants who are undergoing an approved training program under part 135, 141, or 142.

Because this cross-country time must be time as PIC under § 61.65(f)(1), the FAA finds that the reasons discussed for permitting FFS credit towards the PIC flight time requirement in § 61.129(e)(2)(i) (e.g., reasons pertaining to the approved training program, the structured curriculum, and the value of gaining experience performing the duties and functions of PIC in a simulated environment) are equally applicable to the permitted FFS credit towards § 61.65(f)(1). Additionally, with respect to obtaining cross-country time as PIC, the FAA finds that temporarily permitting a maximum of 4 hours in a Level C or higher FFS would not adversely affect safety in light of the skills the pilot would develop in the FFS and the narrow applicability of the alternate requirement to seasoned pilots who already hold a commercial pilot certificate with an instrument rating. Concerning the skills attained in the FFS, the FAA finds that, for the purpose of establishing an initial cadre of powered-lift pilots, the FFS enables the applicant to attain

---

[146] Generally, the FAA does not allow for cross-country time to be credited in a FFS because it does not depict a realistic enroute environment under VMC. Verifying waypoints utilizing pilotage and dead reckoning is not achievable with the visual displays in a FFS because entire portions of the routes are usually not depicted within databases that replicate the enroute environment. However, under IMC conditions the pilot is not being trained and tested on verifying visual reference with the use of visual waypoints, but rather the pilot's ability to utilize instrument navigation to fly along routes depicted on enroute and terminal charts. These charts depict pertinent navigation information that is not related to visually referencing waypoints but utilizing information in the cockpit to verify an aircraft's position. For these reasons, the FAA finds that allowing for this time to be credited in a FFS is appropriate because the display and cockpit information would be identical to that which a pilot would operate in flight.

valuable experience for the purpose of acquiring cross-country time for an instrument rating.

Pursuant to § 61.1, cross-country time must involve the use of dead reckoning, pilotage, electronic navigation aids, radio aids, or other navigation systems to navigate to the landing point. In a Level C or higher FFS that represents a powered-lift, the applicant would acquire experience navigating to different airports by reference to the instruments with the use of navigation aids and other navigation systems. The applicant would also obtain experience interpreting different approach charts and conducting a variety of instrument approaches and departures. To the extent this experience would not include communications with ATC, flight planning, or filing a flight plan under IFR, the FAA finds that the skills a pilot would acquire during these 4 hours combined with the skills a pilot would acquire from conducting 6 hours of cross-country time in the NAS, which would include those tasks, would ensure the pilot has sufficient experience to apply for an instrument-powered-lift rating. Additionally, the instrument rating practical test in a powered-lift, which includes a task on cross-country flight planning, would serve as an adequate safeguard to ensure the applicant is proficient with planning IFR cross-country flights and filing IFR flight plans. Furthermore, the FAA has determined that a minimum of Level C FFS would be required to ensure the appropriate level of aerodynamic modeling, visual fidelity, and motion cueing to replicate the powered-lift.

4. Alternate Requirements for Cross-Country Flights for Commercial Pilot Certificate, Instrument Rating, and Private Pilot Certificate

Cross-country training and experience has been included in the aeronautical experience required for pilot certification since the issuance of the first Civil Aviation Regulations in 1938.[147] Cross-country experience develops the necessary air navigation

[147] Pilot Rating, 14 CFR 20.126, 20.146 (1938).

skills to operate an aircraft outside of a local flying environment that the pilot is familiar with.[148] Cross-country time ensures that the pilot has experience applying knowledge during preflight planning that is essential to the safety of flight including plotting a course on an aeronautical chart, selecting checkpoints, measuring distances, obtaining pertinent weather information, and computing flight time, headings, and fuel requirements.[149] The FAA also ensures the pilot has experience executing cross-country flights during which the pilot employs various skills and tools, including the use of dead reckoning,[150] pilotage,[151] electronic navigation aids, radio aids, and other navigation systems to navigate to the landing point. By requiring a minimum amount of cross-country time in the category of aircraft for which the rating is sought, the FAA ensures the pilot has developed knowledge and skills that are specific to operating that category of aircraft on a flight outside of the pilot's local flying environment.

For example, manipulating the flight controls of an airplane differs from manipulating the flight controls of a helicopter. A pilot conducting a cross-country flight in an airplane may take their hands off the controls while performing the tasks required during the cross-country. By contrast, a pilot conducting operations in a helicopter generally has their feet and hands on the controls at all times. These differences affect the performance of certain tasks, flight deck management, and risk management during a cross-country flight and ultimately require a skill set that is unique to the category of aircraft. Furthermore, by requiring specific cross-country flights that land at a point that is a specified distance from the original departure point, the FAA ensures that trainees are

---

[148] Air navigation is the process of piloting an aircraft from one geographic position to another while monitoring one's position as the flight progresses.

[149] Pilot's Handbook of Aeronautical Knowledge, Chapter 16, Introduction. https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak.

[150] Dead reckoning is navigation solely by means of computations based on time, airspeed, distance, and direction.

[151] Pilotage is navigation by reference to landmarks or checkpoints.

exposed to realistic cross-country flying conditions over terrain with which they are not intimately familiar.[152]

The FAA continues to support this type of experience as an essential element of all pilot training, including training required to pilot a powered-lift. Since aircraft are generally used for transporting persons and property from one location to another, it is imperative that a pilot be trained on and possess the aeronautical experience involved in navigating a powered-lift safely from takeoff to a destination other than the original point of departure.[153]

Upon evaluating the expected range capabilities of powered-lift, however, the FAA has determined that the distances specified in the definition of "cross-country time" in § 61.1 and the specific cross-country flights prescribed in part 61 may not be feasible for the powered-lift coming to market. In the following sections, the FAA explains its proposal to adopt alternate provisions in proposed part 194 that would facilitate a pilot's ability to log cross-country time in a powered-lift and complete cross-country flights over extended terrain while still realizing the objectives of cross-country flight. The FAA also explains its proposal to correct a cross-reference in the definition of cross-country time and to ensure consistent usage of the defined term throughout part 61.

i. Alternate Means to Log Cross-Country Time in Powered-Lift

Cross-country time is currently defined in § 61.1(b).[154] Within § 61.1(b), there are multiple definitions of cross-country time that are applicable based on how the cross-

---

[152] Cross-Country Experience Requirements for Pilot Certification, Final Rule, 47 FR 46064, 46065 (Oct. 14, 1982).

[153] Legal Interpretation to James Hilliard (2009) (stating that the rationale behind the cross-country requirement is to provide a pilot with aeronautical experience flying a significant distance to and landing at an airport that is not the pilot's home airport).

[154] Prior to 1997, part 61 did not contain a formal or universal definition of cross-country time. Rather, where a regulation did not specify parameters of flight that qualified as cross-country, whether specific flight experience was considered cross-country in character was a technical determination made by the FAA. Legal Interpretation to Troy Wambolt (1993). In 1997, the FAA added a new section, § 61.1(b),

country time is used to meet aeronautical experience[155] requirements. Paragraph (i) of the definition of cross-country time in § 61.1(b), provides a generalized definition of cross-country time that is applicable except as provided in paragraphs (ii) through (vi).[156] The current definitions of cross-country time in paragraphs (ii), (vi), and (vii) apply to the aeronautical experience requirements for powered-lift ratings (including an instrument-powered-lift rating) for a private pilot certificate, commercial pilot certificate, ATP certificate, or a military pilot who qualifies for a commercial pilot certificate under § 61.73. To meet the definition of cross-country time for aeronautical experience for powered-lift ratings, the flight time[157] must include a landing point that is at least a straight-line distance of more than 50 nautical miles from the original point of departure, except for an ATP certificate and military pilots who qualify for a commercial pilot certificate under § 61.73, whereby cross-country time for aeronautical experience does not require a landing point.

Initially, when the FAA adopted the cross-country definition for meeting the aeronautical experience requirements for powered-lift ratings, the FAA adopted the same distance of 50 nautical miles that applies to airplane ratings. After comparing the range capabilities for popular single-engine airplanes with those for powered-lift, the FAA has reconsidered the appropriate distance for logging cross-country time in a powered-lift. Many of the popular single-engine airplanes have ranges of 600-800 nautical miles. Thus,

---

Applicability and definitions, to ensure consistent use of terms throughout part 61 (62 FR 16220 (April 4, 1997)); Pilot, Flight Instructor, Ground Instructor, and Pilot School Certification Rules; Correction, Final Rule, 62 FR 40888 (Jul. 30, 1997). The FAA adopted specific definitions of cross-country time to be applicable to separate circumstances of aeronautical experience, which have been updated through subsequent rulemaking. See Certification of Aircraft and Airmen for the Operation of Light-Sport Aircraft, Final Rule, 69 FR 44772 (Jul. 27, 2004); Pilot Certification and Qualification Requirements for Air Carrier Operations, Final Rule, 78 FR 42324 (Jul. 15, 2013).

[155] The FAA also defines aeronautical experience in § 61.1(b) as pilot time obtained in an aircraft, flight simulator, or FTD for meeting the appropriate training and flight time requirements for an airman certificate, rating, flight review, or recency of flight experience requirements of part 61.

[156] Paragraph (i) in the current definition of cross-country time defines cross-country except as provided in paragraphs (ii) through (vi) of the definition. As explained in section V.F of this preamble, the FAA proposes to update the cross-reference to include paragraph (vii) of the definition.

[157] See 14 CFR 1.1 for the definition of flight time.

a 50 nautical mile distance in these airplanes would equate to 6.25 to 8.3% of their capable range. Based on a sampling of the powered-lift projects currently undergoing the type certification process, the range capabilities for the powered-lift coming to market span from 105-162 nautical miles.[158] As such, a 50 nautical mile distance in these powered-lift would equate to 31 to 48% of their capable range.

Given the significant disparity between the range capabilities, the FAA finds it unnecessary to require cross-country time in a powered-lift to include the same distance as that required for airplanes. The FAA is therefore proposing to add § 194.201 as a temporary provision that would reduce the general distance for logging cross-country time in a powered-lift from 50 nautical miles to 25 nautical miles. Specifically, the proposed rule would permit a person to log flight time in a powered-lift as cross-country time when that time (1) includes a point of landing that is at least a straight-line distance of more than 25 nautical miles from the original point of departure,[159] and (2) involves the use of dead reckoning, pilotage, electronic navigation aids, radio aids, or other navigation systems to navigate to the landing point.

Reducing the general distance for logging cross-country time in a powered-lift from 50 nautical miles to 25 nautical miles would not adversely affect a pilot's ability to develop the necessary air navigation skills to operate a powered-lift outside of a local flying environment. The FAA is not proposing to reduce the minimum amount of cross-country time that must be obtained in a powered-lift. While the FAA would permit a pilot to log shorter cross-country flights as cross-country time, the pilot is nevertheless

---

[158] The FAA notes that, currently, only one certification project involves a powered-lift with a greater range.

[159] Powered-lift would not be the only aircraft for which cross-country time must include a point of landing that is at least a straight-line distance of more than 25 nautical miles from the original point of departure. The FAA has defined cross-country time for meeting the aeronautical experience requirements for a rotorcraft rating in this manner since the definitions were first adopted in 1997. Like powered-lift, smaller helicopters have shorter range capabilities than airplanes. For example, the widely-used helicopters that weigh between 2500-7500 pounds have ranges of 250-440 nautical miles.

required to obtain the hours of cross-country time in a powered-lift for the certificate or rating sought. The reduction in nautical miles would not diminish the value of the cross-country experience obtained. Because the FAA expects powered-lift to operate flights of shorter duration (compared to airplanes) and to landing points other than airports, reducing the distance to 25 nautical miles would facilitate the pilot's ability to acquire more realistic cross-country experience in a powered-lift. For example, reducing the distance to 25 nautical miles would ensure powered-lift pilots are executing cross-country flights of a length that are commensurate with those operations that will be conducted in the operating environment after the pilot obtains the powered-lift category rating.

The reduction in distance would also provide the pilot and their flight instructor greater flexibility in selecting routes to landing locations other than airports used for airplane takeoffs and landings, such as heliports and helipads, which would result in valuable cross-country experience for those pilots seeking to operate powered-lift. Furthermore, despite the shorter distances, the pilot would still gain experience with preflight planning, including plotting a course on an aeronautical chart, selecting checkpoints, measuring distances, obtaining pertinent weather information, and computing flight time, headings, and fuel requirements. The pilot would also still gain category-specific cross-country experience from handling the flight controls of a powered-lift while simultaneously navigating the powered-lift on the planned route to a destination other than the point of departure, which includes finding en route checkpoints and using navigation systems and radar services.

While an applicant for a powered-lift category rating or instrument-powered-lift rating would be able to log cross-country time in powered-lift that consists of shorter general distances (i.e., at least more than 25 nautical miles), these applicants would still be required to complete longer cross-country flights as part of the specific aeronautical

experience required for the certificate and rating.[160] As noted later in the discussion of alternate cross-country flight requirements, applicants for a powered-lift rating would still be required to conduct several cross-country training flights that include distances of at least 50 nautical miles. Most pilots would obtain the total hours of category-specific cross-country flight time required to apply for a pilot certificate with a powered-lift category rating by completing the specific cross-country flights proposed in the SFAR.[161] However, to the extent a pilot acquires fewer hours,[162] the proposed alternate definition in § 194.201 would permit that pilot to log shorter cross-country flights to meet the remaining hours of cross-country flight time required for the powered-lift category rating.

The FAA's proposed provision in § 194.201 would govern the logging of cross-country time in powered-lift for the purpose of meeting the aeronautical experience requirements of part 61 that apply to a powered-lift rating, including the cross-country time required for an ATP certificate with a powered-lift category rating. Thus, upon obtaining powered-lift ratings, a person would be permitted to log cross-country time in accordance with § 194.201 towards the 500 hours of cross-country time in § 61.163(a)(1).

ii. Specific Cross-Country Requirements for a Commercial Pilot Certificate

In addition to the alternate requirements for test pilots, instructor pilots, and select pilots from parts 135, 141, and 142 discussed earlier, the FAA is proposing alternate cross-country aeronautical experience requirements to those set forth in § 61.129(e) for

---

[160] Since the FAA adopted the cross-country time definitions in 1997, the specific aeronautical experience requirements for certificates and ratings have prescribed cross-country flights with minimum legs that exceed the general minimum distance specified in the applicable definitions of "cross-country time." For example, cross-country time for airplanes as defined in § 61.1 requires the flight include a distance of at least 50 nautical miles, but § 61.129(a)(3)(iii) contains discrete cross-country training requirements that require completion of cross-country flights that include a distance of at least 100 nautical miles.

[161] While the FAA is proposing to adopt provisions in the SFAR that would require cross-country flights with shorter minimum legs than those currently specified in § 61.129(e), the FAA notes that these requirements would serve as an alternative to the requirements set forth in § 61.129(e). Thus, an applicant for a commercial pilot certificate with a powered-lift category rating still has the option to complete the cross-country flights specified in §61.129(e).

[162] Section 61.129(e)(2)(ii) requires an applicant for a commercial pilot certificate with a powered-lift category rating to acquire 10 hours of cross-country flight time as PIC in a powered-lift. Section 61.65(f) requires an applicant for an instrument-powered-lift rating to obtain 10 hours of cross-country flight time as PIC in a powered-lift.

all applicants for a powered-lift category rating at the commercial pilot certificate level. Section 61.129(e) requires three specific cross-country flights in a powered-lift. Section 61.129(e)(3)(ii) requires one 2-hour cross country flight in a powered-lift in daytime conditions that consists of a total straight-line distance of more than 100 nautical miles from the original point of departure. Section 61.129(e)(3)(iii) requires the same cross-country flight but in nighttime conditions. Lastly, § 61.129(e)(4)(i) requires one cross-country flight of not less than 300 nautical miles total distance with landings at a minimum of three points, one of which is a straight-line distance of at least 250 nautical miles from the original departure point.

The FAA mirrored the nautical mile distances required for airplanes when it adopted these powered-lift cross-country requirements. As explained in the previous section, the powered-lift coming to the market have limited range capabilities when compared to the widely-used single-engine airplanes. These ranges are well under what is currently required by § 61.129(e)(4)(i), which prescribes a long cross-country flight that includes straight-line distance of at least 250 nautical miles from the original departure point. Because the long cross-country flight specified in § 61.129(e)(4)(i) will be insurmountable for several powered-lift, the FAA finds it necessary to provide an alternate means for applicants to obtain valuable cross-country experience over unfamiliar terrain.

In place of the long cross-country flight in § 61.129(e)(4)(i), proposed § 194.233(b) would permit an applicant to complete a cross-country flight that consists of landings at a minimum of three points, with one segment consisting of a straight-line distance of at least 50 nautical miles from the original point of departure. In determining the appropriate distance, the FAA considered the current aeronautical experience requirements for persons seeking a commercial pilot certificate with a rotorcraft category and helicopter class rating under § 61.129(c) because, as previously explained,

helicopters also tend to have shorter range capabilities than airplanes. The aeronautical experience requirements for persons seeking a commercial pilot certificate with a helicopter rating have traditionally required cross-country flights that include a distance of 50 nautical miles.[163]

The distance of 50 nautical miles would be more compatible with the range capabilities of current powered-lift coming to market and with the intended operational use of these powered-lift (e.g., flights of shorter duration compared to airplanes).[164] However, because the current regulation requires an applicant for a powered-lift rating to navigate the powered-lift over a greater distance, the FAA finds it necessary to impose an additional requirement to ensure the applicant for a powered-lift rating obtains cross-country experience comparable to that which would be obtained under the current powered-lift regulation. As a result of reducing the straight-line distance from 250 nautical miles to 50 nautical miles, proposed § 194.233(b) would require an applicant seeking to comply with the alternate requirement to complete an additional cross-country flight of the same specified distance of 50 nautical miles. The proposed additional cross-country flight would have to be conducted to different points of landing than the initial cross-country flight. The FAA notes, however, that the original point of departure may be the same, as pilots generally begin cross-country flights at their home airport. These additional requirements are intended to serve as risk mitigations to ensure the alternate requirement does not have an adverse impact on safety.

The proposed alternative requirement would result in less distance over which the pilot would navigate the powered-lift in cruise flight; however, the applicant would still

---

[163] 14 CFR 61.129(c)(3)(ii) and (iii) and (c)(4)(i).

[164] Powered-lift may emerge with greater range capabilities and higher airspeeds. The proposed requirements are intended to be temporary measures that would remove obstacles in the current regulations and facilitate pilot certification for the powered-lift coming to market. The FAA will continue to evaluate the powered-lift seeking type certification and monitor the affect the proposed rule on cross-country training. Based on this evaluation, the FAA will reevaluate the appropriate distances for cross-country flight in a powered-lift.

obtain valuable cross-country experience because they would be required to navigate the powered-lift to twice as many landing locations as prescribed under the current regulation. The proposed requirement for the second cross-country flight to include landings at different points than the initial cross-country flight would result in the applicant navigating the powered-lift to at least four different landing locations other than the pilot's home airport. Because the applicant would be required to plan an additional cross-country flight to points that differ from those selected for the initial cross-country flight, the applicant would receive increased exposure to preflight planning. For example, the applicant would be required to plot a new course on an aeronautical chart, select new checkpoints over unfamiliar terrain, measure distances to the landing points selected, and obtain pertinent weather information on the day of the flight, all of which would differ from that obtained for the initial cross-country flight. The applicant would also be required to compute the flight time, headings, and fuel requirements for the second cross-country flight, as well as monitor the checkpoints while navigating the powered-lift to the different points of landing.

Requiring the second cross-country flight to include landings at different points than the initial cross-country flight would also ensure the applicant obtains experience navigating the powered-lift to destinations with which they are not intimately familiar, which would increase the applicant's exposure to the use of navigational systems and radar services. Additionally, because the conditions of the second flight would inherently differ from the initial cross-country flight, the applicant would be exposed to new cross-country scenarios that require decision-making and risk management. Furthermore, requiring two cross-country flights, each of which include a minimum of three points with one segment consisting of a straight-line distance of at least 50 nautical miles, would ensure the pilot is exposed to realistic cross-country flying conditions over at least 100 total nautical miles of unfamiliar terrain. As a result, the applicant would still be exposed

to realistic cross-country flying while navigating the powered-lift to locations outside of the pilot's local flying environment, which would enable the pilot to apply and expand their knowledge of cross-country flight and foster the development of air navigation skills. Accordingly, the FAA concludes that the alternate cross-country requirements proposed in the SFAR would not adversely affect safety because they would ensure that the applicant obtains cross-country experience that is comparable to that provided by the current regulation.

The FAA is likewise proposing alternate requirements for the cross-country flights that currently exist in § 61.129(e)(3)(ii) and (iii) (i.e., straight-line distance of at least 100 nautical miles from the original departure point) for the reasons discussed earlier. Under proposed § 194.233(a), an applicant would be required to log at least one 2-hour cross country flight in a powered-lift in daytime conditions (proposed § 194.233(a)(1)) and one 2-hour cross-country flight in a powered-lift in nighttime conditions (proposed § 194.233(a)(2)). Each of these proposed cross-country flights must consist of a total straight-line distance of 50 nautical miles from the original point of departure (rather than 100 nautical miles, which is currently required by § 61.129(e)(3)).

While the proposal would reduce the required distances for the cross-country flights in § 61.129(e)(3) from 100 nautical miles to 50 nautical miles, it would not reduce the required flight time (e.g., 2 hours). Therefore, the pilot would still obtain cross-country experience in the powered-lift for the duration of time that is currently required by the regulations. However, consistent with the previous explanation concerning the alternate requirements for § 61.129(e)(4)(i), because the current regulation requires an applicant for a powered-lift rating to navigate the powered-lift over a greater distance, the FAA finds it necessary to impose an additional requirement to ensure the applicant obtains the necessary air navigation skills under the proposed alternate requirements. As a result of reducing the straight-line distance from 100 nautical miles to 50 nautical miles,

the FAA proposes in § 194.233(a)(3) to require an additional cross-country flight of the same specified distance of 50 nautical miles. Except for the original point of departure, the additional cross-country flight must include landings at different points than the points selected for the day and night cross-country flights. For the same reasons discussed above, the FAA concludes that the alternate requirements for the cross-country flights that currently exist in § 61.129(e)(3)(ii) and (iii) would not adversely affect safety, provided the applicant completes the additional cross-country flight in accordance with proposed § 194.233(a)(3).

In addition to the proposed safety mitigations discussed above, the FAA finds that there are sufficient safeguards in the regulations to prevent any reduction in safety. The applicant for a commercial pilot certificate with a powered-lift category rating would still be required to receive and log ground training from an authorized instructor on the aeronautical knowledge areas specified in § 61.125(b), which includes several areas related to cross-country planning and air navigation (e.g., meteorology, weight and balance computations, use of performance charts, use of aeronautical charts and a magnetic compass for pilotage and dead reckoning, use of air navigation facilities, aeronautical decision making and judgment, and procedures for operating within the NAS). The applicant would also still be required to receive and log flight training from an authorized instructor on the areas of operation specified in § 61.127(b)(5), which includes "navigation."[165] Additionally, the applicant must meet the aeronautical experience requirements that apply to the powered-lift category rating (e.g., 10 hours of cross-country time in a powered-lift) and pass the practical test on the areas of operation listed in § 61.127(b), which includes tasks on cross-country planning and navigation.[166]

---

[165] 14 CFR 61.127(b)(5)(vii).

[166] Specifically, Cross-Country Planning is a Task under Area of Operation Preflight Preparation in the Commercial Pilot for Powered-Lift Category ACS to ensure that applicants exhibit satisfactory knowledge, risk management, and skills associated with cross-country flights and VFR flight planning (e.g., route planning, calculating fuel requirements, creation of navigation logs).

iii. Specific Cross-Country Requirements for an Instrument-Powered-Lift Rating (§ 61.65(f))

In addition to the alternate requirements for test pilots, instructor pilots, and select pilots from parts 135, 141, and 142 discussed earlier, the FAA is proposing alternate cross-country aeronautical experience requirements for all applicants for an instrument-powered-lift rating under § 61.65(f). Currently, the instrument training on cross-country flight procedures required in § 61.65(f)(2)(ii) must include a flight of 250 nautical miles along airways or by directed routing from an ATC facility. For the reasons stated previously, this cross-country distance is not appropriate for the powered-lift coming to the market. Therefore, the FAA has reconsidered the appropriate distances for cross-country flights for an instrument-powered-lift rating.

While the 250 nautical mile requirement in § 61.65(f)(2)(ii) is not required to be in a straight-line distance, the FAA still finds that it would be an obstacle for several powered-lift based on the range capabilities that the FAA has evaluated. Therefore, in place of the long cross-country flight in § 61.65(f)(2)(ii)(A), proposed § 194.235(a)(2)(i) would permit an applicant to complete a cross-country flight that involves a distance of 100 nautical miles along airways or by directed routing from an ATC facility. The FAA again considered the aeronautical experience requirements for persons seeking an instrument-helicopter rating because, as previously explained, helicopters also tend to have shorter range capabilities than airplanes. As explained in this section the distance for helicopters would be more compatible with the range capabilities of current powered-lift coming to market and with the intended operational use of these powered-lift (e.g., flights of shorter duration compared to airplanes).

Consistent with the alternate requirements proposed for the cross-country experience for a commercial pilot certificate, the FAA finds it necessary to impose an additional requirement to ensure the applicant for an instrument-powered-lift rating obtains experience comparable to that which would be obtained under the current

regulation. Thus, the FAA is proposing to require the applicant to complete an additional cross-country flight of the same specified distance of 100 nautical miles.

Under the proposed cross-country experience requirements, the applicant would navigate under IFR for a shorter overall distance. By requiring the applicant to plan and conduct two cross-country flights under IFR rather than one, the FAA would ensure the applicant receives additional experience planning a cross-country flight under IFR and navigating a powered-lift to destinations with which the applicant is not intimately familiar while operating along airways or by receiving direct routing from an ATC facility. Furthermore, the applicant would acquire additional experience filing, activating, and closing an IFR flight plan; navigating under IFR; interpreting appropriate and current approach procedure charts; and performing instrument approaches with the use of navigation systems. Therefore, while the proposed requirements would result in less distance over which the applicant would navigate the powered-lift under IFR, the additional cross-country flight would serve as a risk mitigation to ensure the alternate requirement does not adversely affect safety.

Similar to the proposed alternate cross-country experience requirements discussed in this section of this preamble, there are sufficient safeguards in the regulations to prevent any reduction in safety. Under proposed § 194.235(a)(1), the applicant for an instrument-powered-lift rating would still be required to receive and log ground training from an authorized instructor (or from an instructor pilot) on the aeronautical knowledge areas set forth in § 61.65(b), which would ensure the applicant has the foundational knowledge to plan and execute IFR cross-country flights. The applicant would also still be required to receive and log flight training from an authorized instructor (or from an instructor pilot) on the areas of operation specified in § 61.65(c), which includes ATC clearances and procedures, flight by reference to the instruments, navigation systems, and

instrument approach procedures.[167] Furthermore, the applicant must meet the existing aeronautical experience requirements that apply to the instrument-powered-lift rating (e.g., 10 hours of cross-country flight time as PIC in a powered-lift) and pass the practical test on the areas of operation in § 61.65(c).

The FAA is also proposing in § 194.235(b) to provide relief from the requirement in § 61.65(f)(2)(ii) to perform instrument training on cross-country procedures under instrument flight rules and a flight plan filed with an air traffic control facility when an aircraft is not certificated for IFR. This relief is necessary to prevent a person from filing a flight plan for a powered-lift that is certificated for VFR only operations in violation of § 91.9. This relief is available only when the pilot already holds an instrument airplane rating, an instrument helicopter rating, or an ATP certificate. These pilots would already have experience operating under IFR and will have been tested on instrument procedures and regulations governing IFR operations.[168]

iv. Specific Cross-Country Flights for Private Pilot Certificate (§ 61.109)

This proposed SFAR is intended to enable experienced pilots to become the initial cadre of commercial powered-lift pilots. Once this initial pathway is enabled, those individuals will be able to branch out into the general aviation community with the experience garnered through compliance with this SFAR. The FAA is proposing an alternate pathway for these individuals at the commercial level as discussed in this section of this preamble because they possess the knowledge, skills, and abilities to a degree higher than what is expected of private pilots. Moreover, the powered-lift currently working through the aircraft certification process are complex aircraft intended to be used for commercial passenger-carrying operations. The FAA does not deem it

[167] The introductory language in § 61.65(f)(2) requires that the flight time under that section cover the areas of operation in § 61.65(c); therefore, the cross-country flight required under § 61.65(f)(2)(ii)(A) must cover those areas.

[168] Based on the narrow applicability of this relief and the temporary nature of the SFAR, the FAA finds that requiring the applicant to hold either an instrument rating in an airplane or helicopter or an ATP certificate would appropriately mitigate any risk that may be introduced.

necessary to grant relief from existing regulations at the private pilot level initially due to an expected lack of trainer aircraft for powered-lift limiting the ability to conduct student pilot training in powered-lift.

The FAA expects this SFAR and accompanying permanent regulatory amendments will facilitate flight training under part 61 in powered-lift, including for those individuals seeking a powered-lift rating at the private pilot certificate level. The rationale for offering relief from the cross-country requirements for commercial pilots applies equally to an applicant for a private pilot certificate. Therefore, the FAA is proposing to reduce the nautical mile distances in the aeronautical experience required to be eligible for a private pilot certificate.

To obtain a private pilot certificate with a powered-lift category rating, a person must satisfy the eligibility requirements for a private pilot certificate, which are contained in § 61.103. Section 61.103 contains several requirements, including the requirement for a person to meet certain aeronautical experience set forth by § 61.109 that apply to the aircraft category rating sought before applying for the practical test.[169] The aeronautical experience requirements for a person seeking to obtain a private pilot certificate with a powered-lift category rating or seeking to add a powered-lift category rating to a private pilot certificate are contained in § 61.109(e).

Specifically, § 61.109(e) requires a person who applies for a private pilot certificate with a powered-lift category rating to log at least 40 hours of total flight time as a pilot, which must include at least 20 hours of flight training from an authorized instructor and 10 hours of solo flight training on the areas of operation listed in § 61.107(b)(5). Additionally, this flight training must include the subsets of training set forth in § 61.109(e)(1) through (5), including specified cross-country flight training. First, § 61.109(e)(1) requires training to include three hours of cross-country training in a

[169] 14 CFR 61.103(g).

powered-lift. Section 61.109(e)(2)(i) requires training to include one cross-country flight of over 100 nautical miles total distance. Lastly, § 61.109(e)(5) requires 10 hours of solo flight time consisting of at least 5 hours cross-country time with one solo cross-country flight of at least 150 nautical miles total distance with full-stop landings at three points, of which one segment consists of more than 50 nautical miles between the takeoff and landing locations.

As previously discussed in this section of the preamble, when the FAA adopted the cross-country flight time requirements for a commercial pilot certificate with a powered-lift category rating, the FAA mirrored the nautical mile distance that was required for airplanes. The FAA similarly mirrored the nautical mile distance required for airplanes for the cross-country flight time requirements in obtaining a private pilot certificate with a powered-lift category rating. For reasons discussed in section E of this preamble, the FAA finds it unnecessary to require cross-country flights in powered-lift at the private pilot level to include the same distances as those required for airplanes. Therefore, the FAA is proposing alternate aeronautical experience requirements that would allow an applicant for a private pilot certificate with a powered-lift category rating to complete the cross-country flights in § 61.109 at a reduced nautical mile distance.

First, in place of the cross-country flight in § 61.109(e)(2)(i) (i.e., night flight training that includes one cross-country flight over 100 nautical miles), proposed § 194.237(a) would require an applicant to receive three hours of night flight training that includes two cross-country flights with each flight consisting of a total distance that exceeds 50 nautical miles. Consistent with the prior explanation concerning the alternate cross-country experience requirements for § 61.129(e)(3)(ii) and (iii) and (e)(4)(i), the second cross-country flight would serve as a risk mitigation to ensure that the applicant obtains the necessary air navigation skills under the proposed alternate requirements. Therefore, for the same reasons as previously discussed, the FAA finds the proposed

alternate cross-country experience requirements for the cross-country flight that exists in § 61.109(e)(2)(i) would not adversely affect safety.

Additionally, in place of the solo cross-country flight that is currently listed in § 61.109(e)(5)(ii) (i.e., 150 nautical miles total distance with one segment of the flight consisting of a straight-line distance of more than 50 nautical miles), proposed § 194.237(b) would set forth alternate solo cross-country experience. Specifically, the applicant would be required to complete one solo cross-country flight of 100 nautical miles total distance with landings at three points and with one segment of the flight consisting of a straight-line distance of more than 25 nautical miles (proposed § 194.237(b)(1)).

However, consistent with the discussion in this section of this preamble, it will be necessary to impose an additional requirement to ensure the applicant obtains cross-country experience comparable to that which would be obtained under the current regulation. Therefore, the FAA proposes to require an additional solo cross-country flight to be conducted in a powered-lift (proposed § 194.237(b)(2)). This additional solo cross-country flight would require landings at a minimum of three points, with one segment consisting of a straight-line distance of at least 50 nautical miles from the original point of departure. The additional cross-country flight would be required to be conducted to different points of landing than the initial cross-country flight. The applicant would still obtain valuable cross-country experience because the applicant would be required to navigate the powered-lift to twice the number of landing locations than as currently prescribed under § 61.109(e), providing additional exposure to preflight planning and experience at myriad landing points. The earlier discussion of cross-country alternatives for commercial pilot certificates further details the benefits of navigating the powered-lift to twice as many landing locations, which is equally applicable in this context.

While proposed § 194.237 would reduce the required distances for the cross-country flights in § 61.109, it does not propose to reduce the required flight time. A person seeking a private pilot certificate with a powered-lift category rating would still be required to obtain 3 hours of cross-country flight training in a powered-lift, pursuant to § 61.109(e)(1), and 5 hours of cross-country solo flight time in a powered-lift under proposed § 61.109(e)(5)(i).[170] The SFAR proposal simply accounts for the operational capabilities of powered-lift by the reduction of required nautical miles, while continuing to ensure that the pilot has sufficient cross-country experience and has developed skills that are specific to operating a powered-lift on a flight outside of the pilot's local flying environment corresponding to the private pilot level.

Furthermore, as previously discussed in this section, notwithstanding the current definitions of cross-country time in § 61.1(b), the FAA is proposing to allow flight time logged in a powered-lift as cross-country time provided, in pertinent part, that the time was acquired during a flight that includes a point of landing that was at least a straight-line distance of more than 25 nautical miles from the original point of departure. The FAA notes that this proposal would apply to cross-country flight training time in a powered-lift required by § 61.109(e)(1) and solo cross-country time required by § 61.109(e)(5)(i).[171]

v. Part 141 Appendices

The FAA notes that certain existing minimum curriculum requirements for a part 141 pilot school seeking approval to utilize a powered-lift specified in the part 141 appendices mirror the cross-country requirements set forth in §§ 61.65(f), 61.109(e), and 61.129(e). For example, paragraph 4.(b)(5)(ii) and (iii) of appendix D requires one 2-hour

---

[170] Currently, § 61.109(e)(5) permits an applicant to obtain 10 hours of solo flight time in either an airplane or a powered-lift. For the reasons discussed in section I.H of this preamble, the FAA is proposing to amend § 61.109(e)(5) to require the solo flight time to be obtained in a powered-lift.

[171] This merely reduces the distance requirements listed in § 61.109(e)(2)(i) and (e)(5)(ii) to mirror those required in § 61.109(c)(2)(i) and (c)(5)(ii) for helicopters. Private pilot applicants for a powered-lift rating must meet all other aeronautical experience requirements provided in § 61.109(e).

cross country flight in daytime conditions in a powered-lift and one 2-hour cross country flight in nighttime conditions in a powered-lift that each consist of a total straight-line distance of more than 100 nautical miles from the original point of departure; these requirements correspond to those set forth in § 61.129(e)(3)(ii) and (iii). This is also the case with the minimum cross-country curriculum requirements in appendix B, paragraphs 4.(b)(5)(ii)(A) and 5.(e)(1) for a private powered-lift certification course (mirroring § 61.109(e)(2)(i) and (e)(5)); appendix C, paragraph 4.(c)(3)(ii) for an instrument-powered-lift rating course (mirroring § 61.65(d)(2)(ii)); appendix D, paragraph 5.(e)(2) for a commercial powered-lift certification course (mirroring § 61.129(e)(4)(i)); and appendix M, paragraphs 4.(b)(4)(ii)(A), 4.(b)(4)(iii)(A), and 5.(d)(1) for a combined private pilot certification and instrument rating course.

For the reasons discussed in section V.E, the FAA has found that the alternate cross-country requirements in proposed §§ 194.233, 194.235, and 194.237 would not adversely impact safety, and that part 141 pilot schools should be able to utilize these alternate cross-country distances. Therefore, FAA proposes § 194.239(b) to facilitate this substitution, on the condition that the training course include an additional cross-country flight consistent with the requirements of §§ 194.233, 194.235, and 194.237, as applicable.

vi. Technical Correction and Nomenclature Change

While considering the alternate cross-country requirements proposed in the SFAR, the FAA became aware of the need for a technical correction in the definition of cross-country time in § 61.1(b). Currently, paragraph (i) of the definition provides the general definition of cross-country time "[e]xcept as provided in paragraphs (ii) through (vi) of this definition." However, the definition of cross-country time includes paragraphs (ii) through (vii). Paragraph (vii) contains the cross-country time definition for a military pilot who qualifies for a commercial pilot certificate (except with a rotorcraft category rating) under § 61.73. Thus, like paragraphs (ii) through (vi), paragraph (vii) contains an

exception to the general definition of cross-country time in paragraph (i). The FAA is, therefore, proposing to correct the cross-reference in paragraph (i) of the definition to refer to paragraphs (ii) through (vii) of the definition.

Further, while considering the alternate requirements for the cross-country aeronautical experience in § 61.129(e), the FAA noted that the nomenclature concerning "cross-country time" is inconsistent throughout part 61. The definition contained in § 61.1(b) references "cross-country time" whereas the regulations often use the nomenclature "cross-country flight time." The FAA is proposing to remove "cross-country flight time" throughout part 61 and replace the term with the words "cross-country time." This proposed change would ensure consistent usage of the defined term throughout the regulations. The following sections would be amended to reflect this nomenclature change: §§ 61.65(d), (e), (f), (g) introductory text, (g)(1) and (2); 61.67(b)(3); 61.68(b)(3); 61.129(g)(2)(i); 61.159(a)(1), (a)(5)(i); 61.160(e), (f); 61.161(a)(1); 61.163(a)(1), (a)(3)(i); and 61.411(a)(1)(iii) and (iv), (c)(1)(iii) and (iv), (d)(1)(iii) and (iv), (f)(1)(iii) and (iv), (g)(1)(iii) and (iv).

5. Alternate Experience and Logging Summaries

i. Summary Tables for Obtaining a Commercial Pilot Certificate with Powered-Lift Rating

As noted, the proposed rule language to facilitate airmen certification for a commercial pilot certificate with a powered-lift rating involves several alternate experience and logging requirements. To facilitate readability of the alternate requirements that would apply to persons seeking powered-lift ratings, the FAA has compartmentalized the rule language into individual sections depending on the powered-lift ratings sought. Tables 2, 3, and 4 contain the proposed alternate provisions for a commercial pilot certificate with a powered-lift rating.

Table 2: Alternate Provisions for a Commercial Pilot Certificate with a Powered-Lift Category Rating: Test Pilots and Instructor Pilots

CURRENT FLIGHT TIME REQUIREMENTS (§ 61.129(e))	ALTERNATE PROVISIONS FOR TEST PILOTS*	ALTERNATE PROVISIONS FOR INSTRUCTOR PILOTS*
*To use the alternate provisions below, the flights must be conducted in an experimental powered-lift at the manufacturer and the test pilots and instructor pilots must be authorized by the Administrator to act as PIC of the experimental powered-lift. See proposed §§ 194.217(a) and 194.219(a).		
Powered-Aircraft Time		
100 hours in powered-aircraft, of which 50 hours must be in a powered-lift	*No alternative.*	*No alternative.*
PIC Flight Time		
100 hours of PIC flight time, which includes at least— (1) 50 hours in a powered-lift, and (2) 50 hours in cross-country flight of which 10 must be in powered-lift	A test pilot who is not rated in the powered-lift may log PIC flight time in the experimental powered-lift if (1) the test pilot is the sole manipulator of the controls, (2) the test pilot is acting as PIC, and (3) the flight is conducted for the purpose of R&D or showing compliance. See proposed § 194.217(c).	An instructor pilot who is not rated in the powered-lift may log PIC flight time in the experimental powered-lift if (1) acting as PIC, and (2) the flight is conducted for the purpose of crew training. See proposed § 194.219(c).
Training on the Areas of Operation listed in § 61.127(b)(5)		
20 hours of training on the areas of operation listed in § 61.127(b)(5) that includes at least—	Test pilot may receive this training from an instructor pilot (rather than an authorized instructor) if (1) training is conducted in accordance with the manufacturer's training curriculum, and (2) test pilot receives endorsement from instructor pilot certifying satisfactory completion of the curriculum. See proposed § 194.217(b)(1).	In lieu of receiving this training, an instructor pilot may provide the manufacturer's training curriculum to a test pilot, which includes 20 hours of training on the areas of operation listed in § 61.127(b)(5). Instructor pilot must receive endorsement from management official certifying that instructor pilot provided the training. See proposed § 194.219(b)(1).
(1) 10 hours of instrument training using a view-limiting device including attitude instrument flying, partial panel skills, recovery from unusual flight attitudes, and intercepting and tracking navigational systems. 5 hours of the 10 hours required on instrument	Test pilot may receive this instrument training from instructor pilot in an experimental powered-lift in accordance with the manufacturer's proposed training curriculum. See proposed § 194.217(b)(1).	Instructor pilot may satisfy this requirement by providing instrument training to test pilot in accordance with the manufacturer's proposed training curriculum. See proposed § 194.219(b)(1).

training must be in a powered-lift.		
(2) The following cross-country flights— • One 2-hour cross country flight in a powered-lift in daytime conditions that consists of a total straight-line distance of more than 100 nautical miles from the original point of departure; and • One 2-hour cross country flight in a powered-lift in nighttime conditions that consists of a total straight-line distance of more than 100 nautical miles from the original point of departure; and	Test pilot may complete all of the following cross-country flights— One 2-hour cross country flight in a powered-lift in daytime conditions that consists of a total straight-line distance of more than 50 nautical miles from the original point of departure; One 2-hour cross country flight in a powered-lift in nighttime conditions that consists of a total straight-line distance of more than 50 nautical miles from the original point of departure; and An additional cross-country flight with landings at a minimum of three points, with one segment consisting of a straight-line distance of at least 50 nautical miles from the original point of departure. The additional cross-country flight must include landings at different points than the first two cross-country flights. See proposed § 194.233(a).	Instructor pilot may complete all of the same alternate cross-country flights as test pilot. See proposed § 194.233(a).
(3) 3 hours in a powered-lift with an authorized instructor in preparation for the practical test within the preceding 2 calendar months from the month of the test.	Test pilot may accomplish the practical test preparation with an instructor pilot (rather than an authorized instructor). See proposed § 194.217(b)(2).	Instructor pilot may accomplish the practical test preparation with another instructor pilot (rather than an authorized instructor). See proposed § 194.219(b)(2).
Solo Flight Time or Flight Time Performing the Duties of PIC		
Ten hours of solo flight time in a powered-lift or 10 hours of flight time performing the duties of PIC in a powered-lift with an authorized instructor on	Test pilot may complete 10 hours of solo flight time under an endorsement from an instructor pilot or 10 hours of flight time performing the duties of PIC in a powered-lift with	The alternate provision for test pilots also applies to instructor pilots. See proposed § 194.219(b)(3).

board (either of which may be credited towards the flight time requirement under § 61.129(e)(2), on the areas of operation listed in § 61.127(b)(5)) that includes –	either a test pilot or an instructor pilot onboard. See proposed § 194.217(b)(3).	
(1) One cross-country flight of not less than 300 nautical miles total distance with landings at a minimum of three points, one of which is a straight-line distance of at least 250 nautical miles from the original departure point. However, if this requirement is being met in Hawaii the longest segment need only have a straight-line distance of at least 150 nautical miles; and	Test pilot may complete two cross-country flights with landings at a minimum of three points, with one segment consisting of a straight-line distance of at least 50 nautical miles from the original point of departure. The second cross-country flight must include landings at different points than the first cross country flight. See proposed § 194.233(b).	Instructor pilot may complete the same alternate cross-country flights as test pilot. See proposed § 194.233(b).
(2) 5 hours in night VFR conditions with 10 takeoffs and 10 landings (with each landing involving a flight in the traffic pattern) at an airport with an operating control tower.	*No alternative.*	*No alternative.*

Table 3: Alternate Provisions for a Commercial Pilot Certificate with a Powered-Lift Category Rating: Initial Cadre of Check Pilots, Chief Instructors, Assistant Chief Instructors, and Training Center Evaluators

CURRENT FLIGHT TIME REQUIREMENTS (§ 61.129(e))	ALTERNATE PROVISIONS FOR INITIAL CADRE OF CHECK PILOTS, CHIEF INSTRUCTORS, ASSISTANT CHIEF INSTRUCTORS, AND TCEs* (herein referred to as applicants)
*To use the alternate provisions below, the flights must be conducted in a type-certificated powered-lift at the manufacturer and the applicant must be authorized by the Administrator to serve as an initial check pilot, chief instructor, assistant chief instructor, or training center evaluator for the purpose of initiating training in a powered-lift under an approved training program under part 135, 141, or 142, as appropriate. See proposed § 194.221(a).	
Powered-Aircraft Time	
100 hours in powered-aircraft, of which 50 hours must be in a powered-lift	No alternative.
PIC Flight Time	
100 hours of PIC flight time, which includes at least—	An applicant who is not rated in the powered-lift may log up to 40 hours of PIC flight time in a

(1) 50 hours in a powered-lift, and (2) 50 hours in cross-country flight of which 10 must be in powered-lift	powered-lift for flights that are conducted in accordance with a manufacturer's training curriculum if the applicant is (1) the sole manipulator of the controls, (2) manipulating the controls of the powered-lift with an instructor pilot onboard, and (3) performing the duties of PIC. See proposed § 194.221(c).
Training on the Areas of Operation listed in § 61.127(b)(5)	
20 hours of training on the areas of operation listed in § 61.127(b)(5) that includes at least—	An applicant may receive this training from an instructor pilot (rather than an authorized instructor) if (1) training is conducted in accordance with the manufacturer's training curriculum, and (2) applicant receives endorsement from instructor pilot certifying satisfactory completion of the curriculum. See proposed § 194.221(b)(1).
(1) 10 hours of instrument training using a view-limiting device including attitude instrument flying, partial panel skills, recovery from unusual flight attitudes, and intercepting and tracking navigational systems. 5 hours of the 10 hours required on instrument training must be in a powered-lift.	An applicant may receive this instrument training from instructor pilot in a type certificated powered-lift in accordance with the manufacturer's training curriculum. See proposed § 194.221(b)(1).
(2) The following cross-country flights— • One 2-hour cross country flight in a powered-lift in daytime conditions that consists of a total straight-line distance of more than 100 nautical miles from the original point of departure; and • One 2-hour cross country flight in a powered-lift in nighttime conditions that consists of a total straight-line distance of more than 100 nautical miles from the original point of departure; and	An applicant may complete all of the following cross-country flights— One 2-hour cross country flight in a powered-lift in daytime conditions that consists of a total straight-line distance of more than 50 nautical miles from the original point of departure; One 2-hour cross country flight in a powered-lift in nighttime conditions that consists of a total straight-line distance of more than 50 nautical miles from the original point of departure; and An additional cross-country flight with landings at a minimum of three points, with one segment consisting of a straight-line distance of at least 50 nautical miles from the original point of departure. The additional cross-country flight must include landings at different points than the first two cross-country flights. See proposed § 194.233(a).

(3) 3 hours in a powered-lift with an authorized instructor in preparation for the practical test within the preceding 2 calendar months from the month of the test.	An applicant may accomplish the practical test preparation from an instructor pilot (rather than an authorized instructor). See proposed § 194.221(b)(2).
Solo Flight Time or Flight Time Performing the Duties of PIC	
Ten hours of solo flight time in a powered-lift or 10 hours of flight time performing the duties of PIC in a powered-lift with an authorized instructor on board (either of which may be credited towards the flight time requirement under § 61.129(e)(2), on the areas of operation listed in § 61.127(b)(5)) that includes –	An applicant may complete 10 hours of solo flight time under an endorsement from an instructor pilot or 10 hours of flight time performing the duties of PIC in a powered-lift with an instructor pilot onboard (rather than an authorized instructor). See proposed § 194.221(b)(3).
(1) One cross-country flight of not less than 300 nautical miles total distance with landings at a minimum of three points, one of which is a straight-line distance of at least 250 nautical miles from the original departure point. However, if this requirement is being met in Hawaii the longest segment need only have a straight-line distance of at least 150 nautical miles; and	An applicant may complete two cross-country flights with landings at a minimum of three points, with one segment consisting of a straight-line distance of at least 50 nautical miles from the original point of departure. The second cross-country flight must include landings at different points than the first cross country flight. See proposed § 194.233(b).
(2) 5 hours in night VFR conditions with 10 takeoffs and 10 landings (with each landing involving a flight in the traffic pattern) at an airport with an operating control tower.	No alternative.

Table 4: Alternate Provisions for a Commercial Pilot Certificate with a Powered-Lift Category Rating: Persons Receiving Training Under a Part 135, 141, or 142 Approved Training Program

CURRENT FLIGHT TIME REQUIREMENTS (§ 61.129(e))	ALTERNATE PROVISIONS FOR PERSONS RECEIVING TRAINING UNDER A PART 135, 141, OR 142 APPROVED TRAINING PROGRAM* (herein referred to as applicants)
*To use the alternate provisions below, the applicant must receive training at an approved training program under part 135, 141, or 142 for the purpose of obtaining a powered-lift category rating.	
Powered-Aircraft Time	
100 hours in powered-aircraft, of which 50 hours must be in a powered-lift	No alternative.
PIC Flight Time	
100 hours of PIC flight time, which includes at least— (1) 50 hours in a powered-lift, and	An applicant who is not rated in the powered-lift may log up to 40 hours of PIC flight time in a powered-lift for flights that are conducted in accordance with an approved training program

(2) 50 hours in cross-country flight of which 10 must be in powered-lift	under part 135, 141 or 142 if the applicant is (1) the sole manipulator of the controls, (2) manipulating the controls of the powered-lift with an authorized instructor onboard, and (3) performing the duties of PIC. See proposed § 194.223(c). • An applicant may credit up to 15 hours obtained in a level C or higher FFS toward the requirement to obtain 50 hours of PIC flight time in a powered-lift if (1) the FFS represents the powered-lift category, (2) the applicant was performing the duties of PIC, and (3) the flights are conducted in accordance with an approved training program under part 135, 141 or 142. See proposed § 194.233(d).
Training on the Areas of Operation listed in § 61.127(b)(5)	
20 hours of training on the areas of operation listed in § 61.127(b)(5) that includes at least—	No alternative.
(1) 10 hours of instrument training using a view-limiting device including attitude instrument flying, partial panel skills, recovery from unusual flight attitudes, and intercepting and tracking navigational systems. 5 hours of the 10 hours required on instrument training must be in a powered-lift.	No alternative.
(2) The following cross-country flights— • One 2-hour cross country flight in a powered-lift in daytime conditions that consists of a total straight-line distance of more than 100 nautical miles from the original point of departure; and • One 2-hour cross country flight in a powered-lift in nighttime conditions that consists of a total straight-line distance of more than 100 nautical miles from the original point of departure; and	An applicant may complete all of the following cross-country flights— • One 2-hour cross country flight in a powered-lift in daytime conditions that consists of a total straight-line distance of more than 50 nautical miles from the original point of departure; • One 2-hour cross country flight in a powered-lift in nighttime conditions that consists of a total straight-line distance of more than 50 nautical miles from the original point of departure; and • An additional cross-country flight with landings at a minimum of three points, with one segment consisting of a straight-line distance of at least 50 nautical miles from the original point of departure. The additional cross-country flight must include landings at different points than the first two cross-country flights.

	(See proposed § 194.211(b)) See proposed § 194.233(a).
(3) 3 hours in a powered-lift with an authorized instructor in preparation for the practical test within the preceding 2 calendar months from the month of the test.	No alternative.
Solo Flight Time or Flight Time Performing the Duties of PIC	
Ten hours of solo flight time in a powered-lift or 10 hours of flight time performing the duties of PIC in a powered-lift with an authorized instructor on board (either of which may be credited towards the flight time requirement under § 61.129(e)(2), on the areas of operation listed in § 61.127(b)(5)) that includes –	No alternative.
(1) One cross-country flight of not less than 300 nautical miles total distance with landings at a minimum of three points, one of which is a straight-line distance of at least 250 nautical miles from the original departure point. However, if this requirement is being met in Hawaii the longest segment need only have a straight-line distance of at least 150 nautical miles; and	An applicant may complete two cross-country flights with landings at a minimum of three points, with one segment consisting of a straight-line distance of at least 50 nautical miles from the original point of departure. The second cross-country flight must include landings at different points than the first cross country flight. See proposed § 194.233(b).
(2) 5 hours in night VFR conditions with 10 takeoffs and 10 landings (with each landing involving a flight in the traffic pattern) at an airport with an operating control tower.	No alternative.

ii. Summary Tables for Obtaining an Instrument-Powered-Lift Rating

As noted, the proposed rule language to facilitate airmen certification for an instrument-powered-lift rating involves several alternate experience and logging requirements. To facilitate readability of the alternate requirements that would apply to persons seeking powered-lift ratings, the FAA has compartmentalized the rule language into individual sections depending on the powered-lift ratings sought. Tables 5, 6, and 7 summarize the proposed alternate provisions for an instrument-powered-lift rating.

Table 5: Alternate Provisions for an Instrument-Powered-Lift Rating: Test Pilots and Instructor Pilots

CURRENT FLIGHT TIME REQUIREMENTS (§ 61.65(f))	ALTERNATE PROVISIONS FOR TEST PILOTS*	ALTERNATE PROVISIONS FOR INSTRUCTOR PILOTS*
*To use the alternate provisions below, the flights must be conducted in an experimental powered-lift at the manufacturer and the test pilots and instructor pilots must be authorized by the Administrator to act as PIC of the experimental powered-lift. See proposed §§ 194.225(a) and 194.227(a).		
Cross-Country Time as PIC		
50 hours of cross-country time as PIC, of which 10 hours must have been in a powered-lift	A test pilot who is not rated in the powered-lift may log PIC flight time in the experimental powered-lift toward the 10-hour cross-country time requirement if (1) the test pilot is the sole manipulator of the controls, (2) the test pilot acting as PIC of the powered-lift, and (3) the flight is conducted for the purpose of R&D or showing compliance. See proposed § 194.225(c).	An instructor pilot who is not rated in the powered-lift may log PIC flight time in the experimental powered-lift towards the 10-hour cross-country time requirement if (1) acting as PIC of the powered lift, and (2) the flight is conducted for the purpose of crew training. See proposed § 194.227(c).
Instrument Time on the Areas of Operation listed in § 61.65(c)		
40 hours of actual or simulated instrument time in the areas of operation listed in § 61.65(c), of which 15 hours must have been received from an authorized instructor who holds an instrument-powered-lift rating, and the instrument time includes:	Test pilot may receive 15 hours of instrument training on the areas of operation listed in § 61.65(c) from an instructor pilot (rather than an authorized instructor) if the training is conducted in accordance with the manufacturer's proposed training curriculum, and test pilot receives endorsement from instructor pilot certifying satisfactory completion of the curriculum. See proposed § 194.225(b)(1).	In lieu of receiving the 15 hours of instrument training on the areas of operation listed in § 61.65(c), an instructor pilot may provide this instrument training to the test pilot in accordance with the manufacturer's proposed training curriculum. Instructor pilot must receive endorsement from management official certifying that instructor pilot provided the training. See proposed § 194.227(b)(1).
(1) 3 hours of instrument flight training from an	Test pilot may accomplish the practical test	Instructor pilot may accomplish the practical

authorized instructor in a powered-lift that is appropriate to the instrument-powered-lift rating within 2 calendar months before the date of the practical test; and	preparation with an instructor pilot (rather than an authorized instructor). See proposed § 194.225(b)(2).	test preparation with another instructor pilot (rather than an authorized instructor). See proposed § 194.227(b)(2).
(2) Instrument flight training on cross-country flight procedures, including one cross-country flight in a powered-lift with an authorized instructor that is performed under IFR, when a flight plan has been filed with an ATC control facility, that involves— • A flight of 250 nautical miles along airways or by directed routing from an ATC facility; • An instrument approach at each airport; and • Three different kinds of approaches with the use of navigation systems.	• Test pilot may complete the cross-country flight with an instructor pilot (rather than an authorized instructor). • Instead of completing one cross-country flight of 250 nautical miles, a test pilot may complete two cross-country flights, each of which must involve a flight of 100 nautical miles along airways or by directed routing from an ATC facility.[1] See proposed §§ 194.225(b)(4) and 194.235(a).	• Instructor pilot may complete the cross-country flight with another instructor pilot (rather than an authorized instructor). • Instructor pilot may complete the same alternate cross-country flights as test pilot. See proposed §§ 194.227(b)(4) and 194.235(a).

[1] The other requirements in § 61.65(f)(2)(ii) would continue to apply for persons not utilizing the relief under proposed § 194.235(b). Thus, each cross-country flight with the reduced 100-nautical mile distance must be performed under IFR when a flight plan has been filed with an ATC facility and must involve (1) an instrument approach at each airport and (2) three different kinds of approaches with the use of navigation systems.

Table 6: Alternate Provisions for an Instrument-Powered-Lift Rating: Initial Cadre of Check Pilots, Chief Instructors, Assistant Chief Instructors, and Training Center Evaluators

CURRENT FLIGHT TIME REQUIREMENTS (§ 61.65(f))	ALTERNATE PROVISIONS FOR INITIAL CADRE OF CHECK PILOTS, CHIEF INSTRUCTORS, ASSISTANT CHIEF INSTRUCTORS, AND TCEs* (herein referred to as applicants)
*To use the alternate provisions below, the flights must be conducted in a type-certificated powered-lift at the manufacturer and the applicant must be authorized by the Administrator to serve as an initial check pilot, chief instructor, assistant chief instructor, or training center evaluator for the purpose of initiating training in a powered-lift under an approved training program under part 135, 141, or 142, as appropriate. See proposed § 194.229(a).	

Cross-Country Time as PIC	
50 hours of cross-country time as PIC, of which 10 hours must have been in a powered-lift	An applicant who is not rated in the powered-lift may log PIC flight time in the powered-lift towards the 10-hour cross-country time requirement for flights that are conducted in accordance with a manufacturer's training curriculum if the applicant is (1) the sole manipulator of the controls, (2) manipulating the controls of the powered-lift with an instructor pilot onboard, and (3) performing the duties of PIC. See proposed § 194.229(c).
Instrument Time on the Areas of Operation listed in § 61.65(c)	
40 hours of actual or simulated instrument time in the areas of operation listed in § 61.65(c), of which 15 hours must have been received from an authorized instructor who holds an instrument-powered-lift rating, and the instrument time includes: at least—	An applicant may receive 15 hours of instrument training on the areas of operation listed in § 61.65(c) from an instructor pilot (rather than an authorized instructor) if the training is conducted in accordance with the manufacturer's training curriculum, and the applicant receives endorsement from instructor pilot certifying satisfactory completion of the curriculum. See proposed § 194.229(b)(1).
(1) 3 hours of instrument flight training from an authorized instructor in a powered-lift that is appropriate to the instrument-powered-lift rating within 2 calendar months before the date of the practical test; and	An applicant may accomplish the practical test preparation from an instructor pilot (rather than an authorized instructor). See proposed § 194.229(b)(2).
(2) Instrument flight training on cross-country flight procedures, including one cross-country flight in a powered-lift with an authorized instructor that is performed under IFR, when a flight plan has been filed with an ATC control facility, that involves— • A flight of 250 nautical miles along airways or by directed routing from an ATC facility; • An instrument approach at each airport; and • Three different kinds of approaches with the use of navigation systems.	• Applicant may complete the cross-country flight with an instructor pilot (rather than an authorized instructor). • Instead of completing one cross-country flight of 250 nautical miles, an applicant may complete two cross-country flights, each of which must involve a flight of 100 nautical miles along airways or by directed routing from an ATC facility.[1] See proposed §§ 194.229(b)(4) and 194.235(a).

[1] The other requirements in § 61.65(f)(2)(ii) would continue to apply for persons not utilizing the relief under proposed § 194.235(b). Thus, each cross-country flight with the reduced 100-nautical mile distance must be performed under IFR when a flight plan has been filed with an ATC facility and must involve (1) an instrument approach at each airport and (2) three different kinds of approaches with the use of navigation systems.

Table 7: Alternate Provisions for an Instrument-Powered-Lift Rating: Persons Receiving Training Under a Part 135, 141 or 142 Approved Training Program

CURRENT FLIGHT TIME REQUIREMENTS (§ 61.65(f))	ALTERNATE PROVISIONS FOR PERSONS RECEIVING TRAINING UNDER A PART 135, 141 OR 142 APPROVED TRAINING PROGRAM* (herein referred to as applicants)
*To use the alternate provisions below, the applicant must receive training at an approved training program under part 135, 141, or 142 for the purpose of obtaining a powered-lift category rating.	
Cross-Country Time as PIC	
50 hours of cross-country time as PIC, of which 10 hours must have been in a powered-lift	An applicant may credit up to 4 hours obtained in a level C or higher FFS toward the requirement to obtain 10 hours of cross-country time as PIC in a powered-lift if (1) the FFS represents the powered-lift category, (2) the applicant was performing the duties of PIC, (3) the flight simulates a cross-country flight and includes the performance of instrument procedures under simulated instrument conditions and (3) the flights are conducted in accordance with an approved training program under part 135, 141 or 142. See proposed § 194.231(c).
Instrument Time on the Areas of Operation listed in § 61.65(c)	
40 hours of actual or simulated instrument time in the areas of operation listed in § 61.65(c), of which 15 hours must have been received from an authorized instructor who holds an instrument-powered-lift rating, and the instrument time includes: at least—	*No alternative.*
(1) 3 hours of instrument flight training from an authorized instructor in a powered-lift that is appropriate to the instrument-powered-lift rating within 2 calendar months before the date of the practical test; and	*No alternative.*
(2) Instrument flight training on cross-country flight procedures, including one cross-country flight in a powered-lift with an authorized instructor that is performed under IFR, when a flight plan has been filed with an ATC control facility, that involves— • A flight of 250 nautical miles along airways or by directed routing from an ATC facility; • An instrument approach at each airport; and • Three different kinds of approaches with the use of navigation systems.	Instead of completing one cross-country flight of 250 nautical miles, an applicant may complete two cross-country flights, each of which must involve a flight of 100 nautical miles along airways or by directed routing from an ATC facility.[1] See proposed §§ 194.231(b) and 194.235(a).

[1] The other requirements in § 61.65(f)(2)(ii) would continue to apply for persons not utilizing the relief under proposed § 194.235(b). Thus, each cross-country flight with the reduced 100-nautical mile distance must be performed under IFR when a flight plan has been filed with an ATC facility and must involve (1) an instrument approach at each airport and (2) three different kinds of approaches with the use of navigation systems.

6. Alternate Endorsement Requirements for Certain Persons Seeking Powered-Lift Ratings

Part 61 requires an applicant for a certificate or rating to receive certain endorsements from an authorized instructor. For example, an applicant must receive an endorsement from an authorized instructor certifying that the person has received training on the areas of operation applicable to the certificate or rating sought. An applicant is also required to receive a solo flight endorsement from an authorized instructor pursuant to § 61.31(d)(2). Additionally, to be eligible to take a practical test for a certificate or rating, an applicant must have an endorsement from an authorized instructor certifying that the applicant has received and logged training time within 2 calendar months preceding the month of the practical test and is prepared to take the required practical test.

Under § 61.51(h), a person may log training time when that person receives training from an authorized instructor in an aircraft, full flight simulator, flight training device, or aviation training device. The training time must be endorsed in a legible manner by the authorized instructor and include a description of the training given, the length of the training lesson, and the authorized instructor's signature, certificate number, and certificate expiration date. Section 61.1(b) defines “authorized instructor,” in pertinent part, as a person who holds a flight instructor certificate issued under part 61 and is in compliance with § 61.197, when conducting ground training or flight training in accordance with the privileges and limitations of his or her flight instructor certificate. Section 61.195(b), which prescribes flight instructor limitations, restricts a flight instructor from conducting training in an aircraft unless the flight instructor holds the appropriate ratings on their flight instructor certificate.

As previously discussed, the SFAR would permit test pilots and the initial cadre of instructors who will provide training under the approved training program to receive training from an instructor pilot at the manufacturer for the purpose of adding powered-lift ratings to a commercial pilot certificate even though the instructor pilot does not meet the current definition of "authorized instructor" in FAA regulations. Because the initial cadre of instructors would also add powered-lift rating to their flight instructor certificate, these persons would also be required receive the training and endorsements required under subpart H of part 61 from the instructor pilot. In addition to the training and endorsements for test pilots and the initial cadre of instructors by instructor pilots, the SFAR would permit the instructor pilots to credit the training they provide under the manufacturer's curriculum toward the training requirements for the instructor pilots' own powered-lift ratings.

An instructor pilot at a powered-lift manufacturer may not hold a flight instructor certificate with powered-lift ratings when providing training under the alternate requirements in part 194. Thus, without relief in the SFAR, certain instructor pilots would be prohibited under part 61 from providing logbook or training record endorsements certifying that they have provided the required training in accordance with the manufacturer's training curriculum and the pilot is prepared for the practical test. The FAA is, therefore, proposing in § 194.213 to permit instructor pilots to provide the required logbook or training record endorsements contained in part 61 for a commercial pilot certificate with a powered-lift category rating, an instrument-powered-lift rating, a powered-lift type rating, or a flight instructor certificate with powered-lift ratings. This privilege to provide endorsements, however, extends only to applicants who are (1) test pilots or instructor pilots, or (2) persons authorized by the Administrator to serve as an initial check pilot, chief instructor, assistant chief instructor, or TCE for the purpose of

initiating training in a powered-lift under an approved training program under part 135, 141, or 142.

With respect to applicants for a practical test who are instructor pilots, the FAA is proposing an alternate experience requirement that would require an instructor pilot to receive training in preparation for the practical test from another instructor pilot at the manufacturer. Therefore, when an instructor pilot provides an endorsement to another instructor pilot, that endorsement would certify that the applicant is prepared for the practical test. Consistent with the current prohibition in § 61.195(i), which prohibits a flight instructor from making any self-endorsements for a certificate, rating or practical test, the FAA finds it would be inappropriate to permit the instructor pilot to make a self-endorsement. Therefore, the FAA is proposing to require the instructor pilot to receive an endorsement from a management official within the manufacturer's organization certifying that the instructor pilot has provided the manufacturer's training curriculum to a test pilot in accordance with the proposed alternate experience requirements in the SFAR. To certify that the instructor pilot has provided the training, the management official must hold a position within the organization that enables the management official to have knowledge of the training content provided.

F. Training in an Approved Program under Parts 135, 141, and 142

In section E of this preamble, the FAA proposes alternate logging requirements for a person to obtain a powered-lift category rating and an instrument-powered-lift rating on their commercial certificate. To be eligible for the some of the alternate requirements, the proposal requires that a pilot must satisfactorily complete the applicable curricula for those ratings in an approved training program under part 135, 141, or 142. After

completion of the approved curricula, a person must satisfactorily complete the applicable practical test to obtain powered-lift ratings.[172]

As discussed in more detail later in this section, part 141 pilot schools and part 142 training centers are structured to provide alternate methods to obtain training and testing for part 61 certification. These parts contain specific requirements governing curriculum approval, facilities, and personnel. The part 61 training and certification activity at a part 141 pilot school or a part 142 training center is not limited to a particular certificate level, meaning they are able to conduct training and administer practical tests that result in the issuance of a commercial pilot certificate with category and class ratings, instrument ratings, and type ratings if they have approved courses for the certificate and ratings, the appropriate facilities, and instructors who meet the qualification requirements of the respective parts. Further, existing provisions in parts 141 and 142 also permit certain employees of the part 141 pilot school or part 142 training center to be designated to conduct practical tests on behalf of the FAA. This training and certification activity at part 141 pilot schools and part 142 training centers is appropriate as these air agencies were established as an alternate means to conduct part 61 training and testing.

By contrast, there is currently no provision to allow a part 135 operator to conduct training and testing for a commercial pilot certificate or to add category and class ratings or instrument ratings to a commercial pilot certificate. This limitation on training and testing for part 61 certification is appropriate because part 135 training and checking requirements are not structured to achieve airman certification but rather are structured to qualify pilots to serve in a particular aircraft in the operational environment of part 135.[173]

---

[172] As discussed later in this section, the FAA is proposing to allow pilots to complete part 135 testing and checking activity in lieu of the practical test for powered-lift ratings at the commercial pilot certificate level.

[173] Since 2014, part 135 operators have had the option to obtain approval to provide the Airline Transport Pilot Certification Training Program (ATP CTP), which is a prerequisite for the ATP knowledge test. 14 CFR 135.336.

Historically, airplane and helicopter pilots would have no need to receive commercial pilot certification training at a part 135 operator because these pilots hold the appropriate certificates and ratings before employment at the operator, since these certificates and ratings are the minimum regulatory requirements to serve as a pilot at a part 135 operator. As such, these pilots would have obtained these minimum certificates and ratings through the traditional building block approach to airman certification discussed earlier.

While a part 135 operator may not conduct part 61 training and testing, the FAA has acknowledged in regulation that certain training, testing, and checking activity in part 135 may be accepted in lieu of meeting part 61 requirements. For example, § 61.157(c) permits an employee of a part 135 operator to forgo the part 61 training and endorsements required under part 61 for an aircraft type rating to be added to an ATP certificate or an aircraft type rating to be obtained concurrently with an ATP certificate provided the applicant presents a training record that shows completion of that certificate holder's approved training program for the aircraft type rating. The part 135 operator is not obligated to change any aspect of its part 135 training program to align with the part 61 requirements. Rather, part 61 accepts the part 135 training activity in lieu of meeting the part 61 training requirement for a type rating. In addition to accepting part 135 training for part 61 purposes, § 61.157(f) allows the completion of part 135 competency and instrument proficiency checks to meet the flight proficiency requirements of a practical test but only for the issuance of an ATP certificate with appropriate aircraft ratings. To result in certification, the checks must be conducted by an FAA Aviation Safety Inspector (ASI), an Aircrew Program Designee (APD), or a TCE.

Even at the commercial pilot certificate level, § 61.63(d)(6)(ii) allows an employee of a part 135 operator to credit training in the operator's approved training program toward training and endorsements required by part 61 to obtain a type rating on a commercial pilot certificate. Unlike the ATP certificate, however, § 61.63(d)(6) does

not allow the part 135 competency and instrument proficiency checks to count for the type rating practical test. Rather, the applicant must complete the practical test with a designated pilot examiner (DPE) or ASI under part 61, and the test must be consistent with the applicable type rating testing standard.[174]

The following sections discuss the FAA's proposals for training pilots for powered-lift ratings under approved programs at parts 135, 141, and 142 and how a part 135 operator may opt to conduct this training to ensure that its pilots obtain the proper powered-lift ratings on their commercial pilot certificates to serve in part 135 powered-lift operations.

1. Part 135

As noted, part 135 training and checking is designed to qualify a pilot to serve in a particular aircraft in the specific operation the part 135 operator is authorized to conduct. For airplanes and helicopters, a part 135 pilot generally holds the minimum certificate and ratings for the type of operations being conducted by the operator when they are hired. The minimum certificates and ratings ensure the pilot has the foundational aeronautical knowledge and skills required of a pilot serving in commercial operations, and the part 135 training and checking, which is specific to the aircraft and the authorized operations, ensures that the pilot is qualified for the operational environment of part 135. The part 135 training and checking includes the operational policies and procedures specific to the operator, such as crew resource management, flight planning procedures, authorized approach procedures, and operations in weather conditions like icing conditions.

[174] For example, for an airplane type rating, the practical test must be consistent with the Airline Transport and Type Rating for Airplane ACS or the Airline Transport Pilot and Aircraft Type Rating PTS for Helicopter.

i. Airman Certification Training Curricula

The FAA is proposing a temporary provision in § 194.243(a)(1) to allow a part 135 operator who obtains authorization to conduct powered-lift operations to seek approval to establish and implement a training curriculum to satisfy the following: (1) ground training, flight training, and aeronautical experience requirements in § 61.65 for the addition of an instrument-powered-lift rating to a commercial pilot certificate;[175] (2) ground training, flight training, and aeronautical experience requirements in § 61.63(b) for the addition of an aircraft category rating to a commercial pilot certificate; and (3) ground and flight training requirements in § 61.63(d) to add a type rating to a commercial pilot certificate.

The FAA understands that, unlike airplanes and helicopters, a part 135 operator conducting powered-lift operations may not be able to hire pilots who hold the necessary powered-lift category ratings on their commercial pilot certificates. Therefore, the FAA proposes to allow a part 135 operator to provide ground and flight training to meet the requirements of §§ 61.125(b), 61.127(b)(5), and 61.129(e) for a powered-lift category rating;[176] § 61.65(b), (c), and (f) for an instrument-powered-lift rating; and § 61.63(d) for an aircraft type rating. A part 135 operator would not be required to offer this part 61 training. Nevertheless, this proposal allows part 135 operators the flexibility to determine whether providing such training is necessary to develop a sufficient number of qualified

---

[175] Some part 135 operators will conduct only VFR operations. As described in section V.J of this preamble, the FAA is proposing that powered-lift pilots conducting VFR operations must nevertheless hold an instrument-powered-lift rating similar to the instrument-airplane rating that is required for pilots conducting part 135 VFR airplane operations. Because powered-lift pilots will be required to hold an instrument rating even when performing under VFR, the FAA is proposing to allow part 135 operators to provide training for instrument ratings under an approved airman certification curriculum.

[176] Other than the relief proposed in the SFAR, there is no regulatory relief to obtaining an additional category rating on an existing pilot certificate. Section 61.63(b) requires a person applying for a new category rating to complete all of the training and have the applicable aeronautical experience for the certificate and ratings. As such, § 61.63(b) requires an applicant to meet the requirements in §§ 61.125, 61.127, and 61.129 to add a powered-lift category rating to an existing commercial pilot certificate. By contrast, a person adding a class rating must only obtain a logbook or training record endorsement from an authorized instructor attesting that the person was found competent in the appropriate aeronautical knowledge areas and proficient in the appropriate areas of operation, without meeting the applicable aeronautical experience requirements for the class rating.

pilots for its operations. The FAA envisions that the pilots would complete the certification training before transitioning to the operator's part 135 training; however, the FAA would approve one curriculum if it meets all of the part 61 aeronautical experience requirements and the part 135 training requirements.

A part 135 operator who wants to provide this type of training to its pilots would submit their curricula to the responsible Flight Standards Office for approval in accordance with § 135.325. The FAA has determined that additional and updated inspector guidance will be needed for Flight Standards Offices to ensure consistency with all powered-lift operators' certification curricula.

ii. Curriculum Content

As previously discussed, an applicant for powered-lift ratings at the commercial pilot level would be required to meet the part 61 requirements or the alternate requirements proposed in new part 194. These requirements involve foundational ground and flight training and aeronautical experience that normally would not be included in a part 135 training curriculum. For example, a part 135 operator would not require its pilots to obtain solo flight time or cross-country flight time as is required for powered-lift commercial pilot certification. Moreover, the operator's training curriculum may not involve certain tasks and maneuvers in the ACS for a category rating or instrument rating. For example, the Commercial Pilot – Airplane ACS requires pilots to complete chandelles and lazy eights to add an airplane category with a single-engine land or single-engine sea class rating to a commercial pilot certificate. The purpose of testing these performance maneuvers is to conduct a basic evaluation of a pilot's proficiency in flight control application, maneuver planning, situational awareness, and division of attention.[177] However, these performance maneuvers serve no operational purpose in part 135 operations and would not be conducted during routine part 135 operations.

[177] Airplane Flying Handbook (FAA-H-8083-3), Chapter 10.

Therefore, a part 135 operator would not generally include these maneuvers in their part 135 training curriculum.

Nevertheless, under proposed § 194.243(a), an operator would be able to seek approval to offer this type of training in conjunction with its part 135 operator training to qualify its pilots for part 135 operations. The airman certification curriculum would be required to satisfy the aeronautical experience requirements (including the 20 hours of training) in § 61.129(e) (as required by § 61.63(b)) or the applicable alternate requirements set forth by proposed part 194, the requirements for an instrument rating in § 61.65(f) or the applicable alternate requirements set forth by proposed part 194, and the requirements for adding a type rating in § 61.63(d).[178] As discussed later in this section, the FAA is proposing that the operator may use the competency check and instrument proficiency check required by part 135 to satisfy the practical test requirements with some modifications.

In addition, the FAA notes that, under the special rules in § 135.324, a certificate holder may contract with, or otherwise arrange to use the services of, a training center certificated under part 142 to conduct training, testing, and checking required by part 135 provided the part 142 training center meets the requirements in § 135.324(b).[179] This rule would extend to the part 135 operator's approved certification curricula under the SFAR. As such, an operator could partner with a part 142 training center, which would deliver the part 135 operator's approved certification curriculum. Likewise, the operator could simply send its pilots to a part 141 pilot school or part 142 training center to obtain the necessary powered-lift ratings before returning to the part 135 operator to complete the required part 135 training and checking.

---

[178] Operators that need to provide type ratings to powered-lift pilots who already hold powered-lift category ratings and instrument-powered-lift ratings would follow existing regulations in the same manner as operators using airplanes and rotorcraft that require the pilot to hold a type rating.

[179] Section 135.324 also allows a part 135 operator to use another part 135 operator to provide its training program under contract or other arrangement. That flexibility would also be available to operators for the proposed certification curriculum.

iii. Pilot Eligibility

The FAA is also proposing eligibility standards for the pilots who may be trained under a part 135 airman certification training curriculum, which would be set forth by proposed § 194.243(a)(3). As proposed, a certificate holder may train a pilot for powered-lift ratings only if the pilot is employed by the part 119 certificate holder. This limitation is consistent with other part 61 provisions that recognize training activity by part 135 operators and with the rationale for expanding part 135 training, namely, to grant flexibility to operators trying to qualify sufficient pilots for their operations. The pilots would also be required to meet the certificate and rating requirements of proposed § 194.215(a), which would require at least a commercial pilot certificate with either an airplane category rating with single or multiengine class rating and an instrument-airplane rating, or a rotorcraft category rating with a helicopter class rating and an instrument-helicopter rating. This proposal is consistent with the alternate experience requirements in proposed part 194, and the FAA proposes to impose it on the part 135 operator for the same reasons identified in the discussion of that proposal.

iv. Part 135 Instructors

Currently, the instructors in part 135 are not required to hold a part 61 flight instructor certificate. Rather, a part 135 instructor must meet only the specific part 135 instructor qualification and training requirements in §§ 135.338 and 135.340, respectively. Among these requirements, the instructor must be PIC qualified for the aircraft and the operation,[180] satisfactorily complete the approved part 135 instructor ground and flight training, and may undergo continued observation by their POI, if necessary, or the operator's check pilots to ensure the quality and effectiveness of the

[180] This includes holding the airman certificates and ratings required to serve as a PIC in the certificate holder's operations, satisfactorily completing the training phases for the aircraft, including recurrent training, that are required to serve as a PIC in the certificate holder's part 135 operations, satisfactorily completing the instrument proficiency and competency checks that are required to serve as a PIC in the certificate holder's part 135 operations, and if instructing in an aircraft inflight, meeting the PIC recency of experience requirements.

instruction after initial instructor acceptance. Part 135 instructors focus on training pilots in a particular aircraft in the specific operation rather than on basic airman certification requirements. This training includes the operator's specific policies and procedures detailed in its manuals, such as crew resource management, flight planning procedures, authorized approach procedures, and operations in weather conditions like icing conditions.

By contrast, to provide flight training to another person to meet the requirements for a certificate, rating, or privilege, part 61 generally requires a person to hold a flight instructor certificate issued under that part with the appropriate ratings on that certificate. Specifically, pursuant to § 61.3(d)(2), a person must hold a flight instructor certificate issued under part 61 to give training required to qualify a person for solo flight and solo cross-country flight and to give certain endorsements. These endorsements include endorsing an applicant for a pilot certificate and ratings, flight instructor certificate and ratings, and ground instructor certificate and ratings issued under part 61, endorsing a pilot logbook to show training given, or endorsing a logbook for solo operating privileges.[181]

There are certain instances, however, when a flight instructor certificate issued under part 61 is unnecessary. For example, under § 61.3(d)(3)(ii), a flight instructor certificate is not necessary to provide the training and endorsements if the training is given by the holder of an ATP certificate with a rating appropriate to the aircraft in which the training is given, provided the training is given in accordance with the privileges of the ATP certificate[182] and conducted in accordance with an approved air carrier training program under part 121 or 135. The FAA notes that this exception from holding a flight

[181] 14 CFR 61.3(d)(2)(ii) through (iv).
[182] Under § 61.167(a)(2)(i), an ATP may instruct other pilots in air transportation service in aircraft of the category, class, and type, as applicable, for which the ATP is rated and endorse the logbook or other training record of the person to whom training has been given.

instructor certificate is narrow. It does not permit the holder of an ATP certificate to offer flight training for meeting part 61 requirements outside of a part 121 or 135 training program. Rather, the ATP must be independently qualified under the instructor requirements in part 121 or 135 and may, in the course of providing the part 135 or 121 training, give endorsements for part 61 purposes if the part 121 or 135 training aligns with a particular requirement in part 61. For example, an operator's training program may include flight training in a pressurized aircraft capable of operating at high altitudes. In such instances, a part 135 instructor who also holds an ATP certificate would be able to provide the endorsement required by § 61.31(g).

In addition, although a part 135 operator does not conduct part 61 training, the FAA has acknowledged that certain training, testing, and checking activity in part 135 may be accepted in lieu of meeting part 61 requirements. For example, as discussed, a part 135 commercial pilot may forego the specific training required under part 61 for a type rating training if the pilot receives a flight training record endorsement from a part 135 certificate holder attesting that the person completed the certificate holder's approved ground and flight training program for the aircraft type.[183]

When a commercial pilot receives training at a part 135 operator in an aircraft that requires a type rating, the pilot already holds the appropriate category and class ratings on at least their commercial pilot certificate. Therefore, while the holder of an ATP certificate with the appropriate ratings may instruct other pilots in air transportation service, they are currently limited to instructing other pilots who have already passed the commercial pilot practical test in the category and class of aircraft for which the type rating is sought. As a result, these pilots will have already satisfied the aeronautical experience requirements for at least a commercial pilot certificate in the appropriate category and class of aircraft (e.g., at least 50 hours of PIC time in the category or class

[183] 14 CFR 61.63(d)(6).

of aircraft for which the type rating is sought).[184] Additionally, these pilots will have already demonstrated proficiency and competency within the approved standards for a commercial pilot certificate in the appropriate category and class of aircraft.[185]

Currently, approved training programs under part 135 do not include training and testing required to add category and instrument ratings to a commercial pilot certificate nor does part 61 accept part 135 training and checking activity in lieu of part 61 requirements for a commercial pilot certificate. Therefore, the exception in § 61.3(d)(3)(ii) does not enable the holder of an ATP certificate to provide training for part 61 certification (other than the existing allowances for type ratings or an ATP certificate[186]). Furthermore, the instruction privileges afforded to an ATP certificate holder are limited to those privileges specified in § 61.167(a).[187] To provide flight training and issue endorsements for a commercial pilot certificate or an instrument rating, a person is currently required to hold a flight instructor certificate issued under part 61.[188]

The FAA's proposal to allow part 135 operators to implement a training curriculum that satisfies the training and aeronautical experience requirements for a commercial pilot certificate with a powered-lift category rating and an instrument-powered-lift rating would expand the narrow exception in § 61.3(d)(3)(ii). Specifically, it would enable part 135 instructors who hold ATP certificates with powered-lift ratings to provide training in a powered-lift to pilots seeking to add a powered-lift category rating and an instrument-powered-lift rating to their commercial pilot certificate through the

---

[184] Pursuant to § 61.129(a) and (b), an applicant for a commercial pilot certificate with an airplane rating must have at least 50 hours of PIC time in the airplane category. Similarly, pursuant to § 61.129(c), an applicant for a commercial pilot certificate with a helicopter rating must have at least 50 hours of PIC time in a helicopter.
[185] 14 CFR 61.43(a)
[186] 14 CFR 61.63(d)(6), 61.157(c).
[187] Section 61.167(a)(2)(i) states, in pertinent part, that the holder of an ATP certificate may instruct other pilots in air transportation service in aircraft of the category, class, and type, as applicable, for which the ATP is rated. Section 61.167(a)(2)(iii) states that ATP certificate holders may only instruct as provided in § 61.167, except that an ATP who also holds a flight instructor certificate can exercise the instructor privileges under subpart H of part 61 in an aircraft for which he or she is rated.
[188] 14 CFR 61.193(a)

part 135's airman certification curriculum. This ATP certificate requirement would initially present an obstacle for powered-lift because there would be a limited number of persons who would be able to meet the aeronautical experience requirements for an ATP certificate with a powered-lift category rating. However, even with enough ATP certificate holders with the appropriate powered-lift ratings, the FAA has determined that a person must hold a flight instructor certificate issued under part 61 with the appropriate ratings to provide training for the purpose of adding a powered-lift category rating or an instrument rating to a commercial pilot certificate. This determination is based on (1) the lack of powered-lift experience held by pilots completing the part 135 training program, and (2) the curriculum content required for the issuance of a commercial pilot certificate with a powered-lift category rating and an instrument-powered-lift rating.

Unlike the current part 135 training environment, most powered-lift pilots would come to the part 135 operator with no experience operating a powered-lift. As a result, these pilots would receive their initial training in a powered-lift at the part 135 operator, which presents a unique challenge with respect to instructor qualifications considering the airman certification curriculum content that the part 135 instructor would be responsible for delivering.

As previously discussed, the curriculum content required to add a powered-lift category rating and an instrument-powered-lift rating to a commercial pilot certificate must include foundational ground and flight training and aeronautical experience that would normally not be included in a part 135 training curriculum. For the issuance of a powered-lift category rating on a commercial pilot certificate, the training must cover the knowledge areas specified in § 61.125(b) and the areas of operation contained in § 61.127(b)(5). For the issuance of an instrument-powered-lift rating, the training must cover the knowledge areas specified in § 61.65(b) and the areas of operation contained in § 61.65(c). For example, an applicant for a commercial pilot certificate with a powered-

lift category rating must be trained and tested on cross-country flight planning, navigation (e.g., pilotage, dead reckoning, lost procedures, and diversion), slow flight, accelerated stalls, rapid deceleration and quick stop, and dynamic rollover.[189]

The holder of a flight instructor certificate with a powered-lift category rating, however, would be qualified to provide training on these tasks and maneuvers because each of these tasks and maneuvers are included on the powered-lift flight instructor practical test.[190] Thus, a person seeking a flight instructor certificate with a powered-lift category rating would be trained and tested on their understanding of these tasks and maneuvers, their application of that knowledge to manage associated risks, and their ability to demonstrate the appropriate skills and provide effective instruction for each of these tasks and maneuvers. However, these tasks and maneuvers would normally not be included in a part 135 approved training program for a powered-lift type rating. Additionally, unlike the person who holds the flight instructor certificate with a powered-lift category rating, the holder of an ATP certificate with a powered-lift type rating would not have been trained or tested on their ability to provide effective instruction on these tasks and maneuvers.

Upon evaluating the curriculum content, the FAA has determined that any risk to safety that would result from permitting pilots to receive foundational certification training at a part 135 operator would be minimized by requiring the instructor to hold a flight instructor certificate with appropriate powered-lift ratings, as proposed in § 194.243(a)(2). By requiring a person to hold a flight instructor certificate with the appropriate powered-lift ratings, the FAA would ensure that the person providing training on the required knowledge areas and areas of operation can provide effective instruction on the foundational tasks and maneuvers, demonstrate the skills required to perform those

---

[189] Commercial Pilot for Powered-Lift Category ACS (Draft), Docket No. FAA-2022-1463.
[190] Flight Instructor for Powered-Lift Category ACS (Draft), Docket No. FAA-2022-1463.

tasks and maneuvers within the approved standards, and analyze and correct common errors that occur during training of those tasks and maneuvers.[191]

The FAA recognizes that part 135 operators would be permitted to provide training for pilots to add powered-lift category and instrument ratings only for the duration of the SFAR. The FAA is therefore proposing a temporary provision in § 194.203(b) to ensure that the narrow exception in § 61.3(d)(3)(ii) is not expanded in light of the FAA's proposal, which would significantly broaden the type of part 61 training that may be provided under an approved training program under part 135. Additionally, to ensure the ATP privileges contained in § 61.167(a) are not expanded as a result of the SFAR, the FAA is proposing a temporary limitation in § 194.205 that would prohibit a person who holds an ATP certificate with powered-lift ratings from instructing other pilots in accordance with an approved training program under part 135 for the purpose of obtaining a commercial pilot certificate with a powered-lift category rating or an instrument-powered-lift rating. Together, these two provisions would ensure that a part 135 instructor holds a flight instructor certificate with the appropriate powered-lift ratings when providing the foundational part 61 certification training in a powered-lift.

As previously discussed, the only entities that would be permitted to offer an approved training program for powered-lift ratings would be a part 135 operator, a part 141 pilot school, or a part 142 training center. To provide instruction under part 141 or 142, the person must hold a flight instructor certificate issued under part 61. The FAA recognizes that part 135 instructors are not required to hold a flight instructor certificate when providing instruction in the footprint of an approved part 135 training program that exists today. However, because the SFAR would permit part 135 operators to provide the same part 61 certification training as the part 141 pilot schools and the part 142 training centers, the FAA finds that the part 135 operators are similarly situated to the pilot

[191] Flight Instructor for Powered-Lift Category ACS (Draft), Docket No. FAA-2022-1463.

schools and training centers in this instance. The FAA's proposal to require part 135 instructors to hold a flight instructor certificate with the appropriate powered-lift ratings would ensure that instructors seeking to provide training in accordance with the approved airman certification training program permitted under the SFAR are held to the same qualification standards.

The proposed rule language has been carefully scoped to ensure that the current part 135 training environment is not altered by the FAA's proposal.[192] Once an initial cadre of powered-lift pilots is certificated, the FAA anticipates that a number of powered-lift pilots will obtain flight instructor certificates with powered-lift ratings, which would enable training in powered-lift under part 61. This would result in pilots obtaining the appropriate powered-lift ratings on their commercial pilot certificates prior to part 135 employment consistent with the certification pathway followed by airplane and helicopter pilots.

The FAA understands that permitting a part 135 operator to elect to provide part 61 training for basic certification is a novel approach that may conflict with the historical precedent for part 135 training, which focuses on training a pilot to serve in a particular operational environment. Nevertheless, the introduction of powered-lift as a new category presents unique challenges for airman certification. The FAA encourages comment from part 135 operators on whether they would provide an approved airman certification training program that results in commercial pilot certification in a powered-lift and the obstacles that may prevent part 135 operators from utilizing the proposed alternate pathway set forth in the SFAR.

---

[192] The FAA notes that a part 135 instructor who holds an ATP certificate with powered-lift ratings may utilize the allowance in § 61.3(d)(3)(ii) to the same extent as currently exercised by part 135 instructors who hold ATP certificates with other category ratings.

v. Checking and Testing

Part 135 initial training culminates in evaluations of the pilot's proficiency through the completion of a competency check under § 135.293(b) and, if conducting operations under IFR, a PIC instrument proficiency check under § 135.297. The FAA is proposing in § 194.243(b)(1) that, at the completion of the certification curriculum and the part 135 operator training, a pilot may apply to add a powered-lift category rating concurrently with an instrument-powered-lift rating and an initial powered-lift type rating to their commercial pilot certificate if the person successfully completes the written or oral testing under § 135.293(a)(2) and (3), a competency check under proposed § 135.293(b), and an instrument proficiency check under proposed § 135.297 provided certain conditions are met.[193]

First, the competency check would be required to include the maneuvers and procedures required for the issuance of a commercial pilot certificate with a powered-lift category rating and a powered-lift type rating.[194] Since a pilot completing the part 135 competency check under this proposal would not have previously demonstrated competence for the powered-lift category, it is crucial that the pilot complete all maneuvers and procedures required for the issuance of the powered-lift category rating and powered-lift type rating at the commercial pilot level.

Second, the instrument proficiency check would be required to meet the requirements of § 135.297 as applicable to a PIC holding a commercial pilot certificate, which includes the maneuvers and procedures required for the issuance of an instrument-

[193] As noted earlier, PICs serving in VFR only operations under part 135 would not be required to complete an instrument proficiency check under § 135.297. SICs serving in VFR or IFR part 135 operations also are not required to complete an instrument proficiency check under § 135.297. Nevertheless, an operator may opt to provide a § 135.297 instrument proficiency check to its pilots to issue an instrument-powered-lift rating to meet the requirements of proposed § 135.243(b) and existing § 135.245(a).
[194] See 14 CFR 61.127(b)(5) and 61.157(e)(3) and the applicable ACS.

powered-lift rating.[195] As described in §§ 135.293(e) and 135.297(c), competent performance of each maneuver and procedure on the competency check and instrument proficiency check requires that the pilot be the obvious master of the aircraft, with the successful outcome of the maneuver never in doubt. Finally, as proposed in § 194.243(c), the testing, competency check, and instrument proficiency check would be administered by an ASI, APD who is authorized to perform competency checks and instrument proficiency checks for the certificate holder, or a TCE with appropriate certification authority who is also authorized to perform competency checks and instrument proficiency checks for the certificate holder.

Furthermore, the FAA proposes to exclude the use of certain part 135 regulations that apply to the competency check and instrument proficiency checks previously discussed in proposed § 194.243(b)(1)(iii). Specifically, under proposed § 194.243(b)(2), the allowance in § 135.301(b) would not be applicable to the competency check and instrument proficiency check. Section 135.301(b) allows that, if a pilot fails a maneuver on a check, the person giving the check may provide the pilot with additional training during the check and then the pilot must repeat the failed maneuver. Because the competency check and instrument proficiency check are meeting the flight proficiency portion of the practical test and the pilot is demonstrating competence in the powered-lift category for the first time, the FAA asserts that it is essential that the pilot be held to the same standard as required by § 61.43(c) for other pilots completing a powered-lift practical test. Section 61.43(c) specifies that, if a pilot fails any area of operation, that pilot fails the practical test. As such, the FAA proposes that, if a pilot fails a maneuver on

[195] The FAA notes that since the instrument proficiency check is being used to meet the practical test requirements for an instrument-powered-lift rating, the check must include all approaches required by the Instrument Rating – Powered-Lift ACS, even if the pilot will not be authorized to conduct one or more of those approaches during part 135 operations. For example, an operator may not be authorized to conduct circling approaches during part 135 operations. However, a pilot completing an instrument proficiency check for the purposes of adding an instrument-powered-lift rating, must still satisfactorily complete a circling approach during the check.

the competency check or instrument proficiency check, the person giving the check would not be permitted to provide the pilot with additional training during the check, and the pilot would fail the practical test. Lastly, the FAA proposes that the allowance in § 135.293(d) is not applicable to the competency check for the powered-lift category rating. Section 135.293(d) allows the substitution of a § 135.297 instrument proficiency check for a competency check. The FAA has determined that the substitution allowance is not appropriate since the proposal requires both the competency check and instrument proficiency check to be completed for the reasons previously explained.

2. Part 141 Pilot Schools

As noted, part 141 pilot schools provide an alternate, structured way to obtain part 61 certificates and ratings. The holder of a pilot school certificate must have approved training courses and sufficient personnel and facilities for the training offered. Under § 141.33(a)(3), a person conducting flight training at a part 141 pilot school must hold a part 61 flight instructor certificate with ratings for the approved course of training and any aircraft used in that course.[196] The FAA is not proposing any relief from this requirement.[197] As such, an instructor at a part 141 pilot school will be required to hold a powered-lift category rating and an instrument-powered-lift rating on their commercial pilot certificate and a flight instructor certificate with a powered-lift rating or instrument-

[196] Part 141 also contains requirements for other personnel including chief instructors, assistant chief instructors, and check instructors. Sections 141.35(a)(1), 141.36(a)(1), and 141.37(a)(2)(ii) require that the person hold a commercial pilot certificate or ATP certificate and a current flight instructor certificate in addition to other requirements.

[197] As discussed in section V.E. of this preamble, the FAA is proposing an alternate pathway for persons who are selected and authorized to serve as the initial chief instructors and assistant chief instructors at part 141 pilot schools for the purpose of initiating training in a powered-lift. These persons would be permitted to receive the required training from the powered-lift manufacturers to obtain the powered-lift ratings that are necessary to develop sufficient instructors at part 141 pilot schools. The FAA anticipates that these chief instructors and assistant chief instructors will conduct the initial powered-lift training for other instructor personnel at the part 141 pilot school.

powered-lift rating.[198] The instructor will also be required to hold a type rating on their pilot certificate that corresponds to the aircraft in which the training will be provided.

Initially, part 141 pilot schools would likely have to obtain the necessary training for powered-lift ratings from the manufacturers through the alternate pathways discussed in section V.E of the preamble. As civil powered-lift operations expand, more pilots will begin to hold the powered-lift ratings on their commercial pilot certificates and flight instructor certificates. Part 141 pilot schools may also begin to draw their initial instructors from the pool of military instructors[199] or develop agreements with powered-lift manufacturers who are looking to promote and expand the use of their aircraft. The FAA notes also that other manufacturers have obtained part 142 training center certificates and, in some instances, part 141 pilot school certificates, to facilitate initial training and certification in their aircraft. The FAA anticipates that the proposed relief provided to the persons who serve as test pilots and instructor pilots for powered-lift manufacturers would enable the manufacturers to support training and qualification of other training providers' personnel. Pilot schools will be able to deliver courses of training in accordance with this SFAR that include the alternate experience requirements pending appropriate approvals by the FAA.

3. Part 142

The FAA enabled the expanded use of FFSs and FTDs in 1996 through the creation of part 142,[200] warranted by the enormous advancement in flight simulation technology. At that time, the FAA recognized that the increased complexity and operating costs of the modern turbine-powered aircraft and the current operational

---

[198] Under § 61.183, a person must hold either a commercial pilot certificate or ATP certificate with (1) aircraft ratings appropriate to the flight instructor rating sought, and (2) an instrument rating, or privileges on that person's pilot certificate that are appropriate to the flight instructor rating sought.

[199] As discussed, military instructors who have obtained flight instructor certificates with powered-lift ratings through military competency will be required to obtain powered-lift type ratings on their pilot certificates or conduct flight training in a particular type of powered-lift. See 14 CFR 61.195(d).

[200] Aircraft Flight Simulator Use in Pilot Training, Testing, and Checking and at Training Centers, 61 FR 34508 (Jul. 2, 1996).

environment resulted in an increasing need for the use of FSTDs. The FAA reasoned that FSTDs could provide more in-depth training than can be accomplished in aircraft, while correspondingly reducing air-traffic congestion, noise and air pollution, and training costs.[201]

As noted, a part 142 training center provides an alternate means to accomplish part 61 training and certification.[202] Part 142 contains its own requirements for flight instructor eligibility in § 142.47. Section 142.47(a)(3) requires an instructor who is instructing in an aircraft in flight to be qualified under the flight instructor requirements in subpart H of part 61. To the extent that a part 142 training center will obtain approval for a curriculum that includes a portion of flight training in a powered-lift in flight, the training center will be required, like the part 141 pilot school, to identify instructors who hold the appropriate powered-lift ratings on their pilot and flight instructor certificates. As with part 141 pilot schools, the FAA anticipates that the training center would establish its initial cadre of flight instructors using the alternate requirements for TCEs as discussed in section V.E of this preamble. Once these TCEs obtain the necessary training for powered-lift certification from a manufacturer's instructor pilots, the part 142 training center would establish powered-lift training curricula and utilize the TCEs to provide that training to other instructor personnel at the training center.

For flight training conducted in an FSTD, a part 142 instructor is not required to hold a part 61 flight instructor certificate. Rather, if instructing in an FSTD, § 142.47(a)(5) requires that an instructor satisfy one of three alternatives to provide instruction: (1) meet the commercial aeronautical experience requirements of § 61.129(a), (b), (c), or (e), as applicable, excluding the required hours of instruction in preparation for the commercial pilot practical test; (2) meet the ATP aeronautical experience

---

[202] Id.
[202] 14 CFR 142.1(a).

requirements of §§ 61.159, 61.161, or 61.163 if instructing in an FSTD that represents an "airplane requiring a type rating" or instructing in a curriculum leading to the issuance of an ATP certificate or added rating to an ATP certificate in any category of aircraft;[203] or (3) be employed as an FSTD instructor for a training center providing instruction and testing to meet the requirements of part 61 on August 1, 1996. As such, these part 142 instructors do not need to hold the pilot certificates and ratings but rather must only meet the aeronautical experience requirements for those certificates and ratings.

In developing this proposed rule, the FAA identified a discrepancy between the manner in which the regulation addresses instructor requirements for training in an FSTD representing an airplane requiring a type rating and training in an FSTD representing a rotorcraft or powered-lift requiring a type rating. Under § 142.47(a)(5)(ii), all part 142 instructors who provide training in a curriculum that results in an ATP certificate or an added rating (including an added type rating) to an ATP certificate must meet the aeronautical experience requirements for the ATP certificate appropriate to the rating sought. However, under the current regulatory framework of § 142.47(a)(5)(ii), an instructor is not required to meet the ATP aeronautical experience requirements when providing training for a type rating in an FSTD that represents a powered-lift or rotorcraft if the type rating is being added at a certificate level other than the ATP certificate. The requirement in § 142.47(a)(5)(ii) to meet the ATP experience requirements when providing training to add a type rating to a certificate other than an ATP certificate is only applicable to FSTDs that represent airplanes requiring a type rating. Powered-lift and rotorcraft instructors in this context are required to meet only the aeronautical experience

[203] Section 142.47(a)(5)(ii) requires an instructor to meet the aeronautical experience requirements for an ATP certificate if providing instruction in three distinct scenarios: (1) in an FSTD that represents an "airplane" requiring a type rating at any certificate level; (2) in a curriculum leading to the issuance of an ATP certificate (for any category/class/type rating); or (3) in a curriculum adding a rating to an ATP certificate (for any category/class/type rating).

requirements for a commercial pilot in § 61.129[204] as applicable to the type rating for which the training is provided.[205]

The FAA proposes to permanently amend the language in § 142.47(a)(5)(ii) to replace the word "airplane" with "aircraft," thereby encompassing, first, powered-lift, which would all require a type rating pursuant to this proposal,[206] and, second, any rotorcraft that requires a type rating. The FAA's proposal would align FSTD instructor experience requirements for powered-lift and rotorcraft requiring a type rating with those currently imposed for training in FSTDs representing airplanes that require a type rating. This proposed amendment is consistent with the advancements in complexity of rotorcraft and the operational dissimilarities between powered-lift expected to enter the market, which is subsequently discussed.

For airplanes requiring a type rating, the FAA found that it was appropriate for a part 142 FSTD instructor to meet the aeronautical experience requirements for an ATP certificate to provide flight training in an FSTD representing these airplanes. By doing so, the FAA requires a person who will instruct wholly in an FSTD to have significant and relevant operational time in the NAS. Under the ATP aeronautical experience requirements in § 61.159, a person will have accomplished at least 1,500 hours of flight time, including 250 hours of PIC time or SIC time performing the duties of PIC under supervision in actual operations in the NAS. This flight time far exceeds the aeronautical experience required for a commercial pilot certificate and means that the instructor has extensive experience interacting with air traffic control, operating in an airport environment, navigating the operational challenges of flying the aircraft in weather, utilizing crew resource management, and resolving maintenance discrepancies, all while complying with FAA regulations, procedures, manuals, and authorizations.

---

[204] 14 CFR 142.47(a)(5)(i).
[205] Id.
[206] See section V.A of this preamble.

In reviewing the part 142 instructor requirements for this rulemaking, the FAA has determined that the instructor experience requirements for type-rated airplanes codified in § 142.47(a)(5)(ii) are similarly applicable to powered-lift and rotorcraft. The aeronautical experience requirements for an ATP certificate in a powered-lift or rotorcraft far exceed the experience required for a commercial pilot certificate in those same categories of aircraft and ensure that part 142 instructors who instruct solely in an FSTD for a type rating have extensive operational experience.

This proposed amendment is further supported by the 1992 NPRM that proposed the creation of part 142. In § 142.51(b) and (d), the FAA proposed that an instructor must meet the aeronautical experience requirements for an ATP certificate with an airplane or rotorcraft category, respectively, if providing training in an FSTD representing an airplane or rotorcraft requiring a type rating.[207] The 1996 final rule preamble explained that the FAA simplified and consolidated instructor eligibility requirements into § 142.47 and therefore § 142.51 was no longer needed. The final rule preamble did not indicate the FAA intended to eliminate the requirement for rotorcraft instructors proposed in § 142.51(d).[208] However, when the FAA consolidated the instructor eligibility requirements into § 142.47(a)(5)(ii), the regulation specified "airplane" instead of "aircraft" and, thus, rotorcraft instructors were excluded from the eligibility requirements.

Furthermore, the final rule preamble explained that since publication of the NPRM,[209] the FAA granted exemptions to allow individuals to qualify as simulator-only instructors in certain helicopter FSTDs without holding a flight instructor certificate if

---

[207] Aircraft Flight Simulator Use in Pilot Training, Testing, and Checking and at Training Centers, 57 FR 35905, 35932 (Aug. 11, 1992).

[208] Aircraft Flight Simulator Use in Pilot Training, Testing, and Checking and at Training Centers, Final Rule, 61 FR 34532 (Jul. 2, 1996).

[209] Aircraft Flight Simulator Use in Pilot Training, Testing, and Checking and at Training Centers, Final Rule, 61 FR 34508 (Jul. 2, 1996).

certain alternative requirements were satisfied.[210] The exemptions allowed individuals instructing in an FSTD that represented a helicopter requiring a type rating or instructing in a course of training leading to the issuance of an ATP certificate or an added rating to an ATP certificate, to hold an ATP certificate with a helicopter category, class, and type rating (on the type of helicopter the simulator represented).[211] The FAA determined that, in light of the exemptions, it was appropriate to codify such alternate qualifications in the 1996 final rule to facilitate training center employment of persons who are former military pilots, former or current airline pilots, and other persons who may not hold an instructor certificate.[212] As a result, the FAA determined that instructors providing instruction in an FSTD that represented a rotorcraft that required a type rating needed to likewise satisfy the ATP rotorcraft requirements. However, while the exemptions that the FAA considered were to facilitate instruction in helicopter simulators, the regulation specified "airplane" instead of "aircraft" in § 142.47(a)(5)(ii).

In surveying FAA inspectors with oversight of part 142 training centers, the FAA expects that very few rotorcraft instructors do not meet the FAA's proposed enhanced requirements in § 142.47(a)(5)(ii).[213] Notably, since the 1996 rule was published, very few training centers have integrated a type-rated rotorcraft curriculum. These training centers often also have an ATP curriculum for the type-rated rotorcraft. Often, the training center uses the same instructors in the ATP and non-ATP curriculum for the type-rated rotorcraft. As a result, these instructors may already meet the ATP experience requirements or hold an ATP certificate. The FAA proffers that this permanent

---

[210] Exemption Nos. 5317D and 5324A.

[211] Id.

[212] Aircraft Flight Simulator Use in Pilot Training, Testing, and Checking and at Training Centers, Final Rule, 61 FR 34508, 34540 (Jul. 2, 1996).

[213] In support of this proposal, the FAA also conducted a search of the NTSB database to ascertain whether accidents or incidents resulted from this lower safety standard. At present, there are no accidents or incidents reported. The FAA finds that this conclusion may be the result of rotorcraft instructors already satisfying the ATP aeronautical experience requirements.

amendment would merely align industry practice with the regulatory framework and eliminate any possible confusion on the appropriate application of this section.

The FAA maintains that this amendment is consistent with the technological advancements in rotorcraft over the last two decades since promulgation of the 1996 final rule. For example, since the final rule's publication, rotorcraft have entered the market with ten or more seats. These larger aircraft, carrying significantly more passengers than was contemplated in the 1996 final rule, include complex operational characteristics necessitating a correspondingly higher experience threshold for instruction. Not only have technology and engineering advancements aided in the development of increasingly complex helicopters, but industry has also recognized a substantial increase in helicopter operations. These developments have subsequently required the development and implementation of helicopter simulators for use in part 142 training centers to meet part 135 training program requirements.

For each of these reasons, the FAA proposes to permanently amend § 142.47(a)(5)(ii) to reference "aircraft" rather than "airplane." In this regard, the FAA proposes to impose identical standards for powered-lift and rotorcraft training center instructors as those required for airplanes. As noted, most existing rotorcraft training center instructors already meet the aeronautical experience requirements of § 142.47(a)(5)(ii) for rotorcraft that require type ratings. However, to facilitate integration of this regulatory change while not disrupting current practice for those instructors who may not currently satisfy this standard, the FAA proposes to except instructors that are currently instructing in an FSTD that represent a rotorcraft requiring a type rating from this proposed requirement.

In addition to excepting current instructors from the ATP aeronautical experience requirements for FSTDs that represent a rotorcraft requiring a type rating, the FAA also notes the availability of deviation authority in § 142.9 for both powered-lift and rotorcraft

instructors. Initially, the FAA does not anticipate that powered-lift pilots will be able to satisfy the aeronautical experience requirements for an ATP certificate. For this initial cadre of powered-lift pilots, § 142.9 may provide an avenue for relief from the ATP experience requirements of § 142.47(a)(5)(ii) if the FAA determines that it would not adversely affect the quality of instruction or evaluation.

In particular, a request for deviation requires a detailed description of the proposed alternative plan that enables the certificate holder to achieve the same level of safety as that mandated by the regulation.[214] After the certificate holder submits its request for deviation authority, the FAA may consider the level of safety purportedly achieved by the request, the proposed revisions to the training center's operating procedures and Quality Management Systems, and any accompanying justification, procedures, or policies that the training center proffers in support of its request for relief. After conducting this review, the FAA may grant the certificate holder deviation from compliance with the proposed requirements in § 142.47(a)(5)(ii). As powered-lift pilots acquire additional aeronautical experience, the FAA anticipates that fewer certificate holders will need to utilize the deviation authority available under this section to request relief from § 142.47(a)(5)(ii).

G. Practical Tests

1. Practical Test Equipment and Waiver Authority

Section 61.43 provides the general procedures for a practical test[215] for an applicant to receive a certificate or rating. Specifically, § 61.43(a)(1) currently requires that the completion of a practical test for a certificate or rating include the performance of the tasks specified in the areas of operation for the airman certificate or rating sought.

---

[214] FAA Order 8900.1, Vol. 3, Ch. 54, Sec. 4.

[215] A practical test means a test on the areas of operation for an airman certificate, rating, or authorization that is conducted by having the applicant respond to questions and demonstrate maneuvers in flight, in a flight simulator, or in an FTD. 14 CFR 61.1.

These tasks are set forth in either a Practical Test Standard (PTS) or ACS for the appropriate certificate or rating that the applicant is seeking. The FAA currently has an ongoing rulemaking project that proposes to amend § 61.43(a)(1) to incorporate by reference (IBR) the PTSs and ACSs.[216] The NPRM for the ACS/PTS rulemaking was published on December 12, 2022,[217] and proposed to revise § 61.43(a)(1) to delineate successful completion of the practical test as performing the tasks specified in the areas of operation contained in the applicable ACS or PTS. In light of the transition from PTS to ACS,[218] as discussed in that NPRM, the FAA has drafted ACSs for powered-lift practical tests. Specifically, the FAA proposed to IBR six newly drafted powered-lift ACSs into part 61: (1) ATP and Type Rating for Powered-Lift Category, (2) Commercial Pilot for Powered-Lift Category, (3) Private Pilot for Powered-Lift Category, (4) Instrument Rating – Powered-Lift,[219] (5) Flight Instructor for Powered-Lift Category, and (6) Flight Instructor Instrument for Powered-Lift Category.[220] The six powered-lift ACSs specify the tasks within the given areas of operation that must be accomplished for purposes of receiving a powered-lift category rating, type rating, and/or instrument rating.

While § 61.43 sets forth the general procedures for the practical test, including directing compliance with the powered-lift ACSs in administering testing, the

---

[216] IBR allows Federal agencies to comply with the requirement to publish rules in the Federal Register and the Code of Federal Regulations (CFR) by referring to material already published elsewhere. IBR Handbook, Office of the Federal Register, July 2018.

[217] Airman Certification Standards and Practical Test Standards for Airmen; Incorporation by Reference, NPRM, 87 FR 75955 (Dec. 12, 2022).

[218] The FAA began to establish the ACSs in 2011 to enhance the testing standard for the knowledge and practical tests in collaboration with the aviation industry. The goal in creating the ACS was to drive a systematic approach to the airman certification process, including knowledge test question development and the conduct of the practical test. In cooperation with the ACS Working Group, established through the Aviation Rulemaking Advisory Committee (ARAC), the FAA integrated "aeronautical knowledge" and "risk management" elements into the existing areas of operations and tasks set forth in the PTS. Therefore, the ACS is a comprehensive presentation integrating the standards for what an applicant must know, consider, and do to demonstrate proficiency to pass the tests required for issuance of the applicable airman certificate or rating.

[219] Currently, the FAA has one powered-lift PTS, Instrument Rating Practical Test Standards for Airplane, Helicopter, and Powered-Lift, available on the FAA website at https://www.faa.gov/training_testing/testing/test_standards. The powered-lift portion of the PTS was utilized in drafting the Instrument Rating – Powered-Lift ACS.

[220] The six draft ACSs may be found in the docket for the ACS IBR NPRM: FAA-2022-1463., which is docket FAA-2022-1463.

requirements for the aircraft and equipment utilized by an applicant during the flight increment of the practical test for a certificate and/or rating are found in § 61.45. Specifically, § 61.45(b) stipulates the equipment, other than controls, required of an aircraft used on the practical test and allows the use of an aircraft with operating characteristics that preclude the applicant from performing all the tasks for the practical test.[221] However, when an applicant for a certificate or rating is unable to perform a required task due to aircraft capabilities, an appropriate limitation is placed on the applicant's certificate or rating. This limitation ensures the pilot cannot act as PIC of an aircraft that has capabilities that are inconsistent with the limitation on the pilot's certificate until the pilot satisfactorily demonstrates the task they have not performed.

For example, this situation arises when an applicant is taking a practical test in the Cessna 336 or 337 (C-336/337) series airplanes to add an airplane multiengine land rating onto a commercial pilot certificate for which an applicant holds an airplane single engine land rating. The C-336/337 series do not have a published minimum control speed with the critical engine inoperative (V_{MC}). Thus, an applicant would not be able to perform the V_{MC} demonstration task required by an airplane ACS[222] if a C-336/337 series airplane was used to take the practical test. Therefore, an applicant who successfully completed the practical test in a C-336/337 series airplane would receive a certificate with an appropriate limitation (i.e., Limited to Center Thrust limitation). A pilot may remove this limitation by completing a practical test in an aircraft that is capable of performing the task(s). For example, in the above scenario, a pilot who completes a commercial pilot practical test in a multiengine airplane with a published V_{MC} (i.e., performs the tasks that were not formerly performed) would have the limitation removed.

---

[221] 14 CFR 61.45(b)(2).

[222] For example, V_{MC} demonstration is Task B in Area of Operation X, Multiengine Operations, in the Private Pilot for Airplane Category ACS.

As discussed in section V.A of this preamble, the FAA is proposing to require that all pilots seeking to act as PIC of a powered-lift hold a type rating on their pilot certificate for the type of powered-lift they intend to operate. This proposal would require the successful completion of a practical test for the type rating sought. Through the aircraft type certification and evaluation processes, the FAA recognizes that because there may be differing powered-lift aircraft produced, it is possible certain powered-lift might be precluded from accomplishing certain tasks due to the powered-lift's design (e.g., stalls) that are required by the appropriate ACS. Traditionally, as discussed, this would result in the appropriate limitation on a pilot's certificate.[223] However, due to the proposed type rating requirement, any limitation issued pursuant to § 61.45(b) to a pilot operating a powered-lift as PIC would be unnecessary because the pilot would not be able to perform the maneuver for which the limitation would apply in the aircraft for which they hold the type rating. Further, a person could not act as PIC of a different powered-lift type that may exhibit the limited characteristic without testing in that type of powered-lift first, which would thereby require the pilot to be tested on the specific task or maneuver that was omitted during the prior practical test if the powered-lift for the additional type rating is able to perform that task or maneuver.

For example, if type A powered-lift could not perform a stall, but type B powered-lift could, then a pilot seeking a type rating in type A would not be tested on stalls but would not receive a limitation on the type rating for type A. The absence of a limitation would not present a safety concern if the pilot wished to act as PIC of type B powered-lift because the pilot would need to take a practical test for a type rating in type B powered-lift, which would include the previously omitted evaluation on stalls. By proposing to require a type rating for each type of powered-lift, the type rating itself contains the limitation contemplated in § 61.45(b)(2) for an aircraft not able to perform

[223] 14 CFR 61.45(b)(2).

all tasks in the ACS. Therefore, proposed § 194.207(a) would permit an applicant to use a powered-lift that is precluded from performing all of the tasks required for the practical test without receiving a limitation on the applicant's certificate or rating.[224]

Because there are currently no type-certificated powered-lift, the FAA does not have the requisite information at this time to determine which tasks might be deemed prohibited or unsafe by the aircraft certification and evaluation processes to delineate such tasks in this proposed SFAR or the draft powered-lift ACSs. In fact, there may be no such tasks that emerge. The FAA will identify this information through the type certification process, as well as FSBs. FSBs are established when the responsible FAA Aircraft Certification office issues a Type Certificate for large aircraft, turbojet-powered airplanes, and other aircraft specified by the Administrator through the aircraft certification process. Powered-lift types will be evaluated under the existing FSB process, which will determine the requirements for a pilot type rating, develop training objectives for the type rating, and conduct initial training for the manufacturer's pilots and FAA inspectors.

The FSB is composed of pilot candidates who have varied backgrounds conducting airman testing, evaluating training programs, and reviewing operator manuals. FAA pilots (e.g., FAA flight test pilots, Aircraft Evaluation operations inspectors, FSDO operations inspectors) attend the manufacturer's proposed training program as test subjects and, upon completion, are administered the type rating test, in

---

[224] If an applicant for a flight instructor certificate with a powered-lift category rating brings a powered-lift to the practical test that is incapable of performing a task required for the practical test, an examiner may waive the task in accordance with waiver authority provided by the FAA. Upon passing the practical test, the flight instructor would be qualified to provide instruction in a powered-lift that is capable of performing the task that was waived on the test. The FAA considered restricting a flight instructor from providing instruction in a powered-lift that is capable of performing a task for which the flight instructor has not demonstrated instructional ability. However, to provide training in a powered-lift, the flight instructor would be required to hold a type rating for the powered-lift on their pilot certificate. 14 CFR 61.195(e). The FAA has determined that the flight instructor would be qualified to provide training in the powered-lift based on their demonstration of instructional ability on the flight instructor practical test and their demonstration of pilot skills in the powered-lift on the type rating practical test. However, as the FAA gains more knowledge about tasks that certain powered-lift may be incapable of performing, the FAA may reconsider whether a limitation on the flight instructor certificate is necessary.

accordance with the applicable part 61 regulations. The FAA determines the appropriate type rating designation, the adequacy of proposed training and checking requirements, and determination of airman competency. Additionally, the manufacturer, Aircraft Certification Office, and FAA test pilots validate those tasks applicable to each powered-lift and provide their analysis to the members of the FSB. An assigned FSB member collates the findings into a Flight Standardization Board Report (FSBR). Based off of these determinations, in conjunction with the FAA's determinations of the adequacy of training, the FSBR will identify those tasks that are applicable to the specific type of powered-lift to inform examiners[225] conducting a practical test.[226] A multitude of industry stakeholders use these reports to inform their training programs and POI use the FSBR as a reference when approving operator training, checking, and currency programs.

As discussed, during the type certification and evaluation process, operational limitations of the powered-lift would be identified. The FSBR would subsequently ascertain what tasks in the ACS are inapplicable to the specific type of powered-lift. To account for the potential need to deviate from ACS tasks that cannot be performed, the FAA proposes in § 194.207(b) to temporarily delegate waiver authority to the pilot examiner conducting the practical test. This waiver authority would not be unfettered or at the examiner's discretion; rather, the waived tasks would be set forth on a designee's

---

[225] ASIs and authorized designees administer practical tests for applicants seeking airman certificates and ratings, including conducting evaluations, testing, certification, and the issuance of ratings in accordance with part 61. While ASIs are employees of the FAA, designees are non-employees to whom the Administrator may delegate a matter related to the examination, testing, and inspection necessary to issue a certificate. *See* 49 U.S.C. 44702(d). Designee authority is established under 14 CFR part 183, and the general qualifications for each authorization are set forth in FAA Order 8000.95, as amended. Pilot designees include DPEs under part 61, TCEs under part 142, and APDs under parts 121 and 135.

[226] While the FAA has drafted powered-lift ACSs with input and expertise from industry and working groups, the FAA is uncertain if discrete additional tasks will be required for certain powered-lift type ratings based on the powered-lift's unique characteristics. Should the FSBR and type certification process reveal any additional tasks that are not accounted for the in the ACS but are essential to the operation of the specific type of powered-lift, the FAA may set forth these tasks in a type-specific appendix to the ACS, which would be incorporated by reference in accordance with the Administrative Procedure Act.

Certificate and Letter of Authority (CLOA)[227] specific to each type of powered-lift in which the designee is authorized to conduct practical tests. Specifically, the CLOA will identify the type of powered-lift in which the examiner is authorized to conduct a practical test and the specific tasks that the examiner is authorized to waive for the practical test, which will be set forth in the limitations section of the CLOA.

In addition to the requirement to be tested on the tasks specified in the areas of operation for the airman certificate and rating sought,[228] the FAA's regulations require an applicant for a certificate or rating to receive and log flight training on the applicable areas of operation that apply to the aircraft category and class rating sought.[229] If the FAA authorizes an examiner to waive a specific task during the practical test because the powered-lift is incapable of performing the task, the FAA finds that the applicant should also be relieved from the requirement to receive flight training on that task. Therefore, in proposed § 194.207(c), the FAA proposes to relieve an applicant for a private pilot certificate or commercial pilot certificate with a powered-lift category rating concurrently with a powered-lift type rating from the requirement to receive flight training on a task specified in an area of operation if the powered-lift is not capable of performing the task, provided the FAA has issued waiver authority for the task in accordance with the SFAR. The same reasons that support waiving the task on the practical test, which were previously discussed, also apply to relieving the applicant from the requirement to

---

[227] As new powered-lift are integrated into the market, the FAA anticipates the need for designees and ASIs to administer practical tests to pilot applicants. To serve as a designee for airman testing and certification, an individual must be appropriately qualified and rated in the aircraft type and be authorized through a CLOA. The CLOA provides a description of the designee's authorities, limitations, and associated expiration. See FAA Order 8000.95B, vol. 3, chapt. 5, para. (2)(d). The FAA will continue to identify and designate persons who are qualified consistent with the current policy for other categories of aircraft. As employees of the FAA, an ASI's discretion to waive tasks during a practical test is established in FAA Orders.

[228] 14 CFR 61.43(a)(1).

[229] 14 CFR 61.107(a), 61.127(a). Section 61.157(b) requires that a person who applies for an aircraft type rating added to an ATP certificate or applies for a type rating to be concurrently completed with an ATP certificate requires flight training from an authorized instructor on the areas of operation that apply to the aircraft type rating; the FAA does not find that additional relief is needed from § 61.157(b) since the tasks would be not be applicable to the given aircraft type by existing regulation.

receive flight training on the task. For those reasons, the FAA finds that this proposed provision would not adversely affect safety.

Because the areas of operation listed for issuance of a commercial pilot certificate with a powered-lift category rating in accordance with part 61 mirror those required as certain appendixes that set forth minimum curriculum content, the FAA proposes to extend this same flexibility to part 141 pilot schools seeking approval of a powered-lift course. Therefore, the FAA proposes in § 194.239(a) to allow a part 141 pilot school seeking approval of a course in a powered-lift resulting in a private or commercial pilot certificate to waive training on a task specified in an area of operation if the powered-lift to be used in the course is not capable of performing the task and the FAA has issued waiver authority for that task in accordance with § 194.207(b).

While the FAA determined that there is no need to issue a limitation pursuant to § 61.45(b) due to the type rating requirement proposed in the SFAR, as discussed above, the FAA recognizes that the ability for an examiner to waive a task on a practical test for a powered-lift category rating creates a unique situation for persons who may seek to act as SIC in accordance with § 61.55. As discussed in section V.C of this preamble, a person seeking to act as SIC of a powered-lift type-certificated for more than one required pilot flightcrew member or in operations requiring an SIC pilot flightcrew member would not be required to hold a type rating. Rather, pursuant to § 61.55(a), the person would be required to hold at least a private pilot certificate with the appropriate category and class rating.

In the case of powered-lift, the initial pool of pilots obtaining powered-lift ratings would obtain a commercial pilot certificate with a powered-lift category rating and a type rating. The FAA expects certain persons from this initial pool of commercial pilots to obtain powered-lift category ratings on their flight instructor certificates, thereby enabling these persons to eventually provide flight training to students seeking private

pilot certificates with powered-lift category ratings. If a pilot passes the practical test for a private or commercial pilot certificate with a powered-lift category rating in a powered-lift that was precluded from conducting certain tasks that are required by the applicable powered-lift category ACS, the examiner would waive those tasks on the practical test as previously discussed.

For the reasons explained previously, this would not cause a safety concern because the pilot would have to test for the new powered-lift type rating before acting as PIC. However, because the powered-lift category rating on the private or commercial pilot certificate enables the person to serve as SIC of another powered-lift type in accordance with § 61.55, there could be safety implications should the person seek to serve as SIC of a powered-lift that is capable of performing tasks for which the person was never trained and tested. As explained in section V.C of this preamble, the FAA finds that the current SIC qualification requirements set forth in § 61.55 are sufficient for pilots seeking to act as SIC of a powered-lift, provided those pilots satisfactorily complete a practical test on each task required by § 61.43(a)(1) (i.e., the tasks specified in the areas of operation contained in the applicable Powered-Lift Category ACS).

To the extent a pilot completes a practical test in a powered-lift that was precluded from performing each task required by § 61.43(a)(1), the FAA is proposing in § 194.209(a) to prohibit that pilot from serving as SIC of a powered-lift that is capable of performing the tasks that were waived on the person's practical test until certain requirements are met. Specifically, the FAA is proposing to require the person to receive and log ground and flight training from an authorized instructor on the specific tasks that were waived. Additionally, the FAA is proposing to require the person to receive a logbook or training record endorsement from the authorized instructor certifying that the person has satisfactorily demonstrated proficiency in those tasks.

These requirements would ensure the person has received training on the specific tasks for which the person was not previously trained or tested. Additionally, these proposed requirements would ensure the person has demonstrated the ability to successfully perform the tasks to an authorized instructor prior to serving as SIC of the powered-lift. In determining whether a pilot has demonstrated proficiency of a task, the FAA recommends the authorized instructor use the appropriate ACS, which specifies the approved standards for the specific task. For the same reasons discussed in section V.C of this preamble concerning the role of a PIC, the FAA finds that these additional requirements combined with the SIC qualification requirements prescribed in § 61.55 would ensure the person seeking to serve as SIC of a powered-lift is qualified to do so.

The FAA recognizes that a person employed by a fractional ownership program as set forth in subpart K of part 91 or a person employed by a certificate holder authorized to conduct operations under part 135 may receive training and a competency check in a powered-lift that includes the tasks that were waived on the person's practical test for a commercial pilot certificate with a powered-lift category rating. In accordance with § 135.323, a part 135 air carrier or operator is required to establish and implement an approved training program that ensures each pilot is adequately trained to perform their assigned duties. Therefore, to act as SIC of a powered-lift under part 135, a person would be required to receive ground and flight training in the type of powered-lift to ensure the person is adequately trained to perform the duties of SIC. Additionally, all part 135 pilots are required to complete a § 135.293 competency check every 12 calendar months. Similarly, under part 91 subpart K, § 91.1073 requires each program manager to establish and implement an approved training program that ensures each crewmember is adequately trained to perform their assigned duties, and § 91.1065 requires each pilot to pass a competency check every 12 calendar months. A situation could arise where a

person receives training on the task that was previously waived on the person's practical test and a competency check that includes the task.

For persons that receive such training and checking under part 135 or subpart K of part 91, it would be redundant to require the person to also receive training and an endorsement under part 61. The FAA is therefore proposing in § 194.209(b)(2) an exception to the training and endorsement requirements for those pilots who have received ground and flight training under an approved training program and have satisfactorily completed a competency check under § 135.293 or § 91.1065 in a powered-lift, provided the approved training program and competency check include each task that was previously waived on the person's practical test.[230]

Furthermore, the FAA recognizes that certain powered-lift pilots may seek to obtain additional type ratings on their pilot certificate. Under proposed § 194.209(b)(1), a person seeking an additional type rating may forgo the training and endorsement requirements described above if that person subsequently passes a practical test for a type rating in a powered-lift that is capable of performing all the tasks specified in the ATP and Type Rating for Powered-Lift Category ACS. The type rating practical test would be required to include each task required by § 61.43(a)(1) (i.e., the tasks specified in the areas of operation contained in the ATP and Type Rating for Powered-Lift Category ACS[231]).

The FAA proposes to adopt these requirements in the SFAR because they are temporary in nature and are intended to enable the FAA to ensure an appropriate level of safety while acquiring additional information concerning powered-lift, including any unique operating characteristics that may preclude certain powered-lift from performing

---

[230] This proposed exception is consistent with that in § 61.31(e)(2)(ii) and (f)(2)(ii) for complex and high-performance airplanes.

[231] Airman Certification Standards and Practical Test Standards for Airmen; Incorporation by Reference NPRM, 87 FR 75955 (Dec. 12, 2022).

each task specified in the applicable Powered-Lift Category ACS. The FAA is, however, proposing to permanently amend § 61.55(a) to cross-reference the additional training and endorsement requirements proposed in § 194.209(a) by adding new § 61.55(a)(4). This amendment is intended only to ensure that all persons seeking to act as SIC of a powered-lift pursuant to § 61.55 are aware of the new temporary requirements and the situation under which they would apply.[232]

2. Permit Applicants to Take a Powered-Lift Type Rating Practical Test without Concurrently Obtaining an Instrument-Powered-Lift Rating (§ 61.63(d))

Section 61.63(d) contains the eligibility requirements for a person seeking an aircraft type rating. Currently, § 61.63(d)(1) requires an applicant for an aircraft type rating or an aircraft type rating to be completed concurrently with an aircraft category rating to hold or concurrently obtain an appropriate instrument rating, except as provided in § 61.63(e). Additionally, § 61.63(d)(4) requires the applicant to perform the type rating practical test in actual or simulated instrument conditions, except as provided in § 61.63(e). Under § 61.63(e), an applicant who provides an aircraft that is not capable of the instrument maneuvers and procedures required on the practical test may apply for the type rating or a type rating in addition to the category rating, but the type rating will be limited to "VFR only."

For an applicant seeking a type rating in a powered-lift capable of instrument maneuvers and procedures, the FAA has determined that there are two circumstances under which the applicant should not be required to hold or concurrently obtain an

[232] The FAA notes that the proposed addition of § 61.55(a)(4) would be temporary in nature because it would be obsolete upon the expiration date set forth in proposed § 194.107. When the SFAR expires, the FAA would remove the proposed provision in § 61.55(a)(4) concurrently with the temporary provisions of part 194.

appropriate instrument rating.[233] These two circumstances are discussed in detail in the following subsections.

i. Applicants for an Initial Powered-Lift Type Rating to be Obtained Concurrently with a Powered-Lift Category Rating

Because the FAA is proposing that all powered-lift would require type ratings, the FAA's current regulations would require an applicant for a powered-lift type rating to take three practical tests concurrently: the practical tests for (1) a powered-lift type rating, (2) powered-lift category rating, and (3) an instrument-powered-lift rating.[234] To serve as PIC of a powered-lift, a person would be required to hold both a powered-lift category rating and a powered-lift type rating pursuant to § 61.31(d).[235] If a person does not yet hold a powered-lift category rating on their pilot certificate through military competency, they would be required to apply for a powered-lift type rating concurrently with a powered-lift category rating pursuant to § 61.63(d).[236] Additionally, § 61.63(d)(1) requires an applicant for a type rating to either hold or concurrently obtain an appropriate instrument rating. The only pilots who hold commercial pilot certificates with powered-lift category ratings and instrument-powered-lift ratings are military pilots who qualified for the ratings pursuant to § 61.73 based on their military pilot qualifications. All other pilots would be required to apply for a powered-lift type rating concurrently with a

---

[233] Proposed § 194.211(b) and (c) address the two circumstances discussed in this preamble section. To avoid confusion with the current "VFR only" provisions codified in § 61.63(e), which apply only to aircraft not capable of instrument maneuvers and procedures, the FAA is proposing an applicability provision in § 194.211(a) to make clear that the temporary provisions in paragraphs (b) and (c) apply only to persons seeking a type rating in a powered-lift that is capable of performing instrument maneuvers and procedures.
[234] As discussed in more detail, if an applicant seeks a type rating in a powered-lift that is not capable of performing instrument maneuvers and procedures, that applicant would not be required to take three practical tests concurrently because the exception to § 61.63(d)(1) and (4), which is contained in § 61.63(e), would apply.
[235] Section 61.31(d) prescribes that, to serve as PIC of an aircraft, a person must hold the appropriate category, class, and type rating (if a class or type rating is required) for the aircraft to be flown.
[236] As discussed in more detail later in this section, the FAA is proposing to revise §§ 61.45 and 61.64 to clarify its position that a person may not take a practical test in an aircraft that requires a type rating without obtaining a type rating.

powered-lift category rating and instrument-powered-lift rating. Therefore, to obtain all three ratings, the applicant would be required to satisfactorily complete three practical tests concurrently.[237]

Under FAA regulations, a person seeking an airplane or helicopter type rating has the flexibility to take the type rating practical test independent of the other practical tests. For example, an applicant for an airplane or helicopter type rating may obtain an instrument-airplane or instrument-helicopter rating in an airplane or helicopter for which a type rating is not required prior to applying for a type rating in an airplane or helicopter. As a result, an applicant for an airplane or helicopter type rating is not required to take a type rating practical test concurrently with an instrument rating practical test. Similarly, because there are airplanes and helicopters for which a type rating is not required, an applicant for an airplane or helicopter type rating may obtain the appropriate category and class ratings on their pilot certificate prior to taking the type rating practical test.[238] Thus, an applicant for an airplane or helicopter type rating is not required to take the type rating practical test concurrently with the practical test for an aircraft category or class rating.

If the FAA requires the PIC to hold a type rating for each type of powered-lift, as proposed, there would be no powered-lift for which a type rating is not required. As a result, the current regulations would preclude a pilot from obtaining a powered-lift category rating or an instrument-powered-lift rating prior to applying for their initial powered-lift type rating practical test. Requiring applicants for an initial powered-lift type

---

[237] Ratings are placed on a pilot certificate (other than student pilot) when an applicant satisfactorily accomplishes the training and certification requirements for the rating sought. 14 CFR 61.5. To obtain an aircraft type rating, an applicant must pass the practical test for the type rating at the ATP certification level. 14 CFR 61.63(d)(3). To obtain a powered-lift category rating on a commercial pilot certificate, the applicant must pass the practical test on the areas of operation listed in § 61.127(b) that apply to the powered-lift category rating sought. 14 CFR 61.63(b); 61.123(g). To obtain an instrument-powered-lift rating, the applicant must pass a practical test on the areas of operation in § 61.65(c).

[238] To act as PIC of an airplane that requires a type rating, the pilot must hold an airplane category rating with the appropriate class rating on their pilot certificate. Similarly, to act as PIC of a helicopter that requires a type rating, the pilot must hold a rotorcraft category and helicopter class rating on their pilot certificate. 14 CFR 61.31(d).

rating to take three practical tests concurrently would be both burdensome and inconsistent with the flexibility that the regulations currently provide to applicants for airplane and helicopter type ratings. Pursuant to § 61.31(d), a person may not act as PIC of a powered-lift unless that person obtains both a powered-lift type rating and a powered-lift category rating on their pilot certificate. The FAA therefore is not proposing any change that would allow an applicant to apply for their initial powered-lift type rating without concurrently obtaining a powered-lift category rating. The FAA is proposing in § 194.211(b)(1) to enable an applicant to take the instrument-powered-lift rating independent from the practical tests for the powered-lift category and type ratings. The FAA has concluded that this temporary allowance as proposed would not adversely affect safety.

Currently, § 61.63(e) contains an exception to the requirement, in § 61.63(d)(1), for a type-rating applicant to hold or concurrently obtain an appropriate instrument rating. Under § 61.63(e), an applicant for a type rating who provides an aircraft that is not capable of the instrument maneuvers and procedures required on the practical test may receive a type rating upon completion of the practical test with a "VFR only" limitation. The applicant may have the "VFR only" limitation removed for that aircraft type by: (1) passing a practical test in that type of aircraft in actual or simulated instrument conditions; (2) passing a practical test in that type of aircraft on the appropriate instrument maneuvers and procedures in § 61.157; or (3) becoming qualified under § 61.73(d) for that type of aircraft. Additionally, § 61.63(e)(2) states that when an instrument rating is issued to a person who holds one or more type ratings, the amended pilot certificate must bear the "VFR only" limitation for each aircraft type rating that the person did not demonstrate instrument competency.

The FAA is not proposing to amend § 61.63(e). Therefore, if a powered-lift is not capable of performing instrument maneuvers and procedures, an applicant for a type

rating in that powered-lift may obtain a "VFR only" limitation in accordance with § 61.63(e). The FAA finds, however, that powered-lift that are capable of instrument maneuvers and procedures would present a situation that differs from other categories of aircraft because the FAA has not previously required a type rating for each type of aircraft that falls within a broad category of aircraft. To provide flexibility consistent with that provided to applicants for an airplane or helicopter type rating, the FAA is proposing § 194.211(b), which would allow an applicant for a powered-lift type rating to take the type rating practical test independent of the practical test for the instrument-powered-lift rating. Regarding the type rating practical test, proposed § 194.211(b)(2) would also relieve an applicant from being tested on the areas of operation listed in § 61.157(e) that consist of performing instrument maneuvers and procedures in actual or simulated instrument conditions. The FAA is proposing to leverage the regulatory framework that exists in § 61.63(e), including the "VFR only" limitation, to implement the desired flexibility.

Under proposed § 194.211(b), an applicant for a powered-lift type rating in addition to a powered-lift category rating may apply for the type rating without holding or concurrently obtaining the appropriate instrument rating. Consistent with current § 61.63(d)(4) and (e), the applicant would not be required to perform the type rating practical test in actual or simulated instrument conditions. As stated in the draft ATP and Type Rating for the Powered-Lift Category ACS, the applicant seeking a "VFR only" type rating would conduct tasks that are normally performed by reference to the instruments using visual references.[239] Upon successfully completing the practical test for the type rating, the applicant would receive the powered-lift type rating with a "VFR only" limitation on their pilot certificate.

[239] FAA-S-ACS-17, Appendix 1.

The aeronautical experience requirements for an instrument-powered-lift rating require the applicant to receive 3 hours of instrument flight training from an authorized instructor in a powered-lift that is appropriate to the instrument-powered-lift rating within 2 calendar months before the date of the instrument rating practical test.[240] The purpose of issuing the "VFR only" type rating to an applicant who is applying for a powered-lift type rating concurrently with a powered-lift category rating is to enable the applicant to take the instrument rating practical test at a later date. Because the applicant will be eligible to apply for the instrument rating practical test at the time that they apply for the type rating and category rating practical tests, the applicant will have already obtained 3 hours of flight training in preparation for the instrument rating practical test within the 2 calendar months preceding the month of the practical tests for the type rating and category rating. The FAA therefore finds it reasonable to propose a requirement, as set forth in proposed § 194.211(b)(3), that would require the applicant to obtain the instrument-powered-lift rating and remove the "VFR only" limitation for the type rating within 2 calendar months from the month in which the applicant passes the type rating practical test. The FAA believes permitting persons to exercise the privileges of a "VFR only" powered-lift type rating for 2 calendar months would not adversely affect safety. While the powered-lift would be capable of performing instrument procedures and maneuvers, the "VFR only" limitation would restrict the pilot from operating the powered-lift under IFR. As a result, the pilot would be permitted to operate the powered-lift only under the conditions for which the pilot demonstrated mastery of the powered-lift on the practical test.[241] Furthermore, current § 61.133(b)(1) serves as a sufficient safeguard to prevent any reduction in safety with respect to powered-lift operations that would carry passengers for hire. Specifically, under § 61.133(b)(1), a person who applies

---

[240] 14 CFR 61.65(f)(2)(i).
[241] 14 CFR 61.43(a)(2).

for a commercial pilot certificate with a powered-lift category rating would receive a limitation if that person does not hold an instrument-powered-lift rating. The limitation would prohibit the commercial pilot from carrying passengers for hire in powered-lift on cross-country flights in excess of 50 nautical miles or at night.

To remove the "VFR only" limitation, pursuant to proposed § 194.211(b)(4), the pilot would be required to: (1) pass an instrument rating practical test in a powered-lift in actual or simulated conditions, and (2) pass a practical test in the powered-lift for which the "VFR only" limitation applies on the appropriate areas of operation listed in § 61.157(e) that consist of performing instrument maneuvers and procedures in actual or simulated instrument conditions. The FAA recognizes that the conditions for removing a "VFR only" limitation from a powered-lift type rating would differ from the conditions that currently exist in § 61.63(e)(1)(ii), which apply to the removal of a "VFR only" limitation from a type rating for an aircraft that was not capable of performing instrument maneuvers and procedures at the time of the type rating practical test.

Because the intent of the proposal is to permit the applicant to complete the instrument rating practical test at a later date, the FAA is proposing to require the satisfactory completion of the instrument rating practical test as a condition of removing the "VFR only" limitation from the type rating. Additionally, because the applicant was not required to perform the appropriate instrument maneuvers and procedures for a type rating when they passed the practical test for a "VFR only" type rating, the FAA is also proposing to require the satisfactory completion of the instrument portion of the type rating practical test as a condition of removing the "VFR only" limitation. After the FAA has had sufficient time to analyze the removal of a "VFR only" limitation pursuant to § 61.63(e)(1)(ii), the FAA may contemplate future rulemaking to update the conditions specified therein.

As previously stated, to remove the "VFR only" limitation for a powered-lift type rating, a person would be required to take two practical tests in actual or simulated instrument conditions: (1) the instrument rating practical test, and (2) the portion of the type rating practical test that includes performing instrument maneuvers and procedures in actual or simulated conditions. The draft Instrument Rating – Powered-Lift ACS specifies which tasks an applicant must satisfactorily perform for the issuance of an instrument rating in the powered-lift category. Similarly, the draft ATP and Type Rating Powered-Lift Category ACS specifies which areas of operation and tasks an applicant must satisfactorily perform on the type rating practical test to remove the "VFR only" limitation for a powered-lift type. Upon reviewing the proposed tasks required for each practical test, the FAA has determined that a person would encounter several overlapping tasks when taking the practical tests concurrently. The FAA has evaluated the standards for each of the overlapping tasks and has determined that it is unnecessary to require a person to perform the same task more than once, provided the task is performed to the highest standard set forth in the respective ACSs.

For example, a person would be required to perform a circling approach procedure on both the instrument rating practical test and the type rating practical test. The draft Instrument Rating – Powered-Lift ACS requires the applicant to perform the procedures while maintaining airspeed +/- 10 knots and desired heading/track +/- 10 degrees. The draft ATP or Type Rating Powered-Lift Category ACS also requires the applicant to perform the circling approach procedure, but to more exacting standards (i.e., maintain airspeed +/- 5 knots and desired heading/track +/- 5 degrees). If a pilot demonstrates their ability to perform the circling approach procedure to the more exacting standards specified in the draft ATP or Type Rating Powered-Lift Category ACS, the FAA finds it unnecessary to require that pilot to perform the same task a second time to the less stringent standards specified in the draft Instrument Rating – Powered-

Lift ACS. Accordingly, when a task required for the instrument rating practical test overlaps with a task required for the type rating practical test, proposed § 194.211(d) would permit a person to perform the task a single time provided the person performs the task to the highest standard required for the task.

The proposed language in § 194.211(b)(4) concerning the completion of the type rating practical test differs slightly from the language in § 61.63(e)(1)(ii)(B). The FAA's proposed language is intended to clarify that the cross-reference to § 61.157 refers to the areas of operation of which the practical test for a type rating is comprised. The areas of operation for a person seeking a powered-lift type rating are contained in § 61.157(e).[242] A person who holds a type rating with a "VFR only" limitation is required to pass the portion of the type rating practical test that includes the instrument maneuvers and procedures (e.g., the portion of the practical test that was not previously completed). Therefore, only certain areas of operation listed in § 61.157(e) are appropriate. The draft ATP and Type Rating for Powered-Lift Category ACS specifies which areas of operation and which tasks must be completed for the removal of a "VFR only" limitation. Furthermore, the FAA notes that, pursuant to § 61.63(d)(4), the type rating practical test must be performed in actual or simulated instrument conditions. For consistency with current § 61.63(d)(4), proposed § 194.211(b)(4)(ii) would make clear that the practical test required to remove the "VFR Only" limitation for a powered-lift type, which is a component of the powered-lift type rating practical test, must be completed in actual or simulated instrument conditions.[243]

Pursuant to proposed § 194.211(b)(5), if a person who obtains a powered-lift type rating with a "VFR only" limitation pursuant to § 194.211(b)(1) does not remove the

---

[242] Section 61.63(d)(3) requires a person who applies for an aircraft type rating or an aircraft type rating to be completed concurrently with an aircraft category or class rating to pass the practical test at the ATP certification level. Section 61.157(a)(1) states that the practical test for an ATP certificate is given for an aircraft type rating. The ATP practical test consists of the areas of operation listed in § 61.157(e) that apply to the aircraft category and class rating sought. 14 CFR 61.153(h).

[243] See also 14 CFR 61.157(b)(3).

limitation within 2 calendar months from the month in which the person completed the type rating practical test, then the powered-lift type rating for which the "VFR only" limitation applies will become invalid for use until the person removes the limitation in accordance with § 194.211(b)(4). Upon becoming "invalid," a person may no longer exercise the privileges associated with the type rating and the "VFR only" limitation. For powered-lift that are not large aircraft or turbojet-powered, the FAA considered allowing a pilot after the two months had elapsed to continue to exercise private pilot privileges until the limitation could be removed and seeks comment on whether such relief would be appropriate.

The FAA recognizes that, for aircraft that were not capable of instrument maneuvers and procedures at the time of the type rating practical test, § 61.63(e)(1)(ii)(C) permits a person to remove the "VFR only" limitation for the aircraft type by becoming qualified under § 61.73(d) for that type of aircraft. Section 61.73(d) permits a person to obtain an instrument-powered-lift rating based on military pilot qualifications. A military powered-lift pilot seeking a powered-lift type rating may obtain their powered-lift category rating and instrument-powered-lift rating pursuant to the military competency provisions of § 61.73 prior to applying for a powered-lift type rating practical test. As a result, these pilots would not encounter the obstacle of taking all three practical tests simultaneously. Because these pilots do not need the flexibility provided by the proposal, which would permit the instrument rating practical test to be completed at a later date, there are no circumstances under which these pilots would be issued a "VFR only" limitation under the SFAR.[244] The FAA therefore finds it unnecessary to enable persons to remove the "VFR only" limitation for a type of powered-lift by obtaining an instrument-powered-lift rating pursuant to § 61.73(d).

---

[244] These pilots could potentially receive a "VFR only" limitation for a powered-lift that is not capable of performing instrument maneuvers and procedures pursuant to current §61.63(e).

The FAA emphasizes that the proposed rule would not amend § 61.63(d)(1). It would only add an option in the SFAR (i.e., part 194) for applicants to take the instrument rating practical test separate from the practical tests for a powered-lift type rating and a powered-lift category rating. Thus, applicants for a powered-lift type rating would still have the option to take all three practical tests concurrently pursuant to § 61.63(d)(1).

ii. Obtaining Powered-Lift Type Ratings with "VFR only" Limitations on a Private Pilot Certificate

Under current § 61.63(d)(1), a private pilot who applies for an airplane or helicopter type rating is required to hold or concurrently obtain an appropriate instrument rating. An airplane or helicopter, however, only requires a type rating if the aircraft is large or turbojet-powered. Thus, under the current regulations, a private pilot may obtain the appropriate category and class ratings to operate airplanes and helicopters that do not require a type rating under § 61.31(a) without ever obtaining an appropriate instrument rating.[245]

As discussed previously, the FAA's proposal would require a type rating for each type of powered-lift. As a result, the current requirement in §61.63(d)(1) to hold or concurrently obtain an instrument rating would apply to every person seeking to operate a powered-lift, including private pilots.

Due to the FAA's inability to establish classes of powered-lift at this time, the underlying reasons for requiring a type rating for a powered-lift differ, in part, from the reasons for requiring a type rating for large aircraft and turbojet-powered airplanes. For

[245] There are circumstances under which a private pilot would be required to hold an instrument rating. To act as PIC of a civil aircraft under IFR or in weather conditions less than the minimums prescribed for VFR flight, a person must hold the appropriate instrument rating on that person's pilot certificate. 14 CFR 61.3(e)(1). Additionally, to act as SIC of an aircraft type certificated for more than one required pilot flightcrew member or in operations requiring a SIC pilot flightcrew member, a person must hold an instrument rating or privilege that applies to the aircraft being flown if the flight is conducted under IFR. 14 CFR 61.55(a)(2).

example, as explained further in section V.A of this preamble, there is a lack of commonality between powered-lift, which makes it infeasible for the FAA to establish classes of powered-lift at this time. By requiring a type rating for each type of powered-lift, the FAA would ensure that persons are trained and tested on the unique design and operating characteristics of each powered-lift. If the FAA were able to establish classes of powered-lift, private pilots would be permitted to obtain powered-lift category and class ratings without concurrently obtaining an instrument rating, similar to what is currently permitted for airplanes and helicopters under part 61. These private pilots would be required to obtain an appropriate instrument rating only if the powered-lift required a type rating pursuant to the current requirements in § 61.31(a) (e.g., large aircraft or turbojet-powered[246]).

The FAA recognizes that there may be private pilots who seek to operate a powered-lift under VFR without ever obtaining an instrument-powered-lift rating. In light of the current regulatory framework for private pilots with airplane and helicopter ratings, the limited privileges associated with the private pilot certificate, and the underlying reasons for requiring type ratings for all powered-lift, the FAA is proposing in § 194.211(b)(6) to except certain private pilots from the requirement to remove the "VFR only" limitation set forth in proposed § 194.211(b)(3). Specifically, a private pilot who obtains a "VFR only" type rating for a powered-lift that is less than (or equal to) 12,500 pounds,[247] maximum certificated takeoff weight, and not turbojet-powered would not be required to remove the "VFR only" limitation within a certain timeframe.

The FAA finds that this proposal would not adversely affect safety. The proposed exception for the aforementioned private pilots would result in an outcome consistent

---

[246] Currently, § 61.31(a)(2) applies to turbojet-powered airplanes. However, in the future, if the FAA proposes an amendment to establish classes for powered-lift, it would also propose a corresponding amendment to § 61.31(a)(2) to include turbojet-powered powered-lift.

[247] This aligns with the definition of large aircraft, provided in § 1.1 as aircraft more than 12,500 pounds, maximum certificated takeoff weight.

with airplane and helicopter pilots under current §61.63(d)(1), as a private pilot seeking a powered-lift type rating would be required to hold or concurrently obtain an instrument-powered-lift rating only if the aircraft is large or turbojet-powered. This would enable private pilots seeking to operate a powered-lift under VFR only to obtain the required category and type ratings for the powered-lift without also obtaining the appropriate instrument rating. Additionally, a private pilot has limited privileges compared to a commercial pilot. Current § 61.113(a), which sets forth private pilot privileges and limitations, serves as a sufficient safeguard to ensure an appropriate level of safety. Specifically, a person who holds a private pilot certificate is generally prohibited from acting as PIC of an aircraft that is operating for compensation or hire, or that is carrying passengers or property for compensation or hire.[248] Therefore, a private pilot with a "VFR only" type rating would not be permitted to operate the powered-lift for compensation or hire or carry persons or property for compensation or hire.[249]

Furthermore, recognizing the reasons for requiring a type rating for each type of powered-lift, the FAA concludes that a private pilot who passes a "VFR only" type rating practical test would still be required to be trained and tested on the unique design and operating characteristics of each powered-lift. While the private pilot would not be required to perform the instrument maneuvers and procedures required for a type rating on the practical test, the pilot would still be required to demonstrate mastery of the powered-lift on the type rating practical test while performing the required tasks using visual references. Additionally, because the private pilot would hold a "VFR only" limitation for the powered-lift type, the pilot would be authorized to operate the powered-lift only under the conditions for which the pilot demonstrated proficiency of the aircraft,

---

[248] 14 CFR 61.113(a).

[249] Section 61.113(a) prohibits private pilots from acting as PIC for compensation or hire or from acting as PIC carrying persons or property for compensation or hire. Section 61.113(b) through (h) contain limited exceptions to these general prohibitions (e.g., expense-sharing with passengers).

meaning the pilot could not act as PIC under IFR or weather conditions less than the minimums for VFR.

In addition to proposing an exception in proposed § 194.211(b)(6) that would enable private pilots of certain powered-lift to retain the "VFR only" type rating indefinitely, the FAA is proposing § 194.211(c)(1), which would allow for these private pilots to obtain additional "VFR only" type ratings on their private pilot certificates, provided the powered-lift are not large or turbojet-powered. Consistent with current § 61.63(d)(4) and (e) and proposed § 194.211(b)(2), the applicant would not be required to perform the VFR only type rating practical test in actual or simulated instrument conditions.

While the FAA is not proposing to require private pilots to remove "VFR only" limitations when those limitations apply to powered-lift that are not large aircraft and not turbojet-powered, the FAA is proposing rule language that would provide these private pilots with the option to do so. A private pilot would remove the "VFR only" limitation in the same manner as discussed in this section (i.e., through proposed § 194.211(b)(4)).

iii. Clarification of Requirements for a Practical Test in an Aircraft that Requires a Type Rating

As previously discussed, the FAA is proposing relief to prevent a pilot seeking powered-lift ratings from having to complete three practical tests simultaneously. The proposed relief is consistent with the FAA's longstanding view that a person who uses an aircraft that requires a type rating for the practical test cannot complete the practical test if it does not include the tasks and maneuvers for the type rating (which are the same tasks and maneuvers required for an ATP certificate with category and class ratings). In essence, it is not possible to demonstrate mastery of the aircraft as required by § 61.43(a) in an aircraft that requires a type rating by performing the tasks and maneuvers for a category and class rating alone. As such, when an applicant furnishes an aircraft that

requires a type rating (or an FSTD that represents an aircraft requiring a type rating) for a practical test, the applicant must meet the requirements for the type rating under § 61.63(d) for a private pilot or commercial pilot certificate or § 61.157(b) for an airline transport pilot certificate.[250] The FAA notes that the Fifth Circuit recently concluded that FAA's regulations do not currently require an applicant furnishing an aircraft that requires a type rating to also satisfy all of the requirements for the type rating.[251] Therefore, the FAA is proposing to add language to make completely clear that a person may not furnish an aircraft that requires a type rating (or an FSTD representing an aircraft requiring a type rating) for the practical test without being eligible for a type rating and applying for a type rating, unless the person already has the type rating.

Given the relevancy of the issue to this rulemaking, the FAA proposes three amendments in part 61. First, the FAA proposes to clarify certain prerequisites for practical tests by revising § 61.39(a)(3). Specifically, paragraph (a)(3) requires an applicant for a practical test for a certificate or rating issued under part 61 to accomplish the required training and obtain certain aeronautical experience. The FAA proposes to revise paragraph (a)(3), which requires a person applying for a practical test to meet the training and aeronautical experience for the certificate or rating sought. The FAA proposes to create paragraphs (a)(3)(i) and (ii). Paragraph (a)(3)(i) would retain the currently situated requirement that if an applicant applies for a practical test with flight time accomplished under § 61.159(c), the applicant must present certain records required by part 135. The FAA proposes to add new paragraph (a)(3)(ii), which would require an

---

[250] To be eligible for a type rating practical test, a pilot must receive training on the areas of operation listed in § 61.157(e) that apply to the aircraft type rating. 14 CFR 61.63(d)(2) and 61.157(b). The detailed tasks associated with each area of operation are provided in the ATP and Type Rating ACS. How a task is performed may vary depending on the systems and capabilities of the aircraft type. Therefore, to satisfactorily complete a type rating practical test, a pilot should be trained on how to perform the tasks specified for each area of operation in the aircraft for which a type rating sought. The flight training should prepare the pilot to demonstrate mastery of the aircraft by performing each task successfully. 14 CFR 61.43(a).

[251] *See Flight Training Int'l, Inc. v. Fed. Aviation Admin.* 58 F.4th 234 (5th Cir. 2023).

applicant seeking an initial category and class rating, if a class rating is required, on a private, commercial, or ATP certificate in an aircraft that requires a type rating (or a FSTD that represents an aircraft that requires a type rating) to either meet the eligibility requirements for a type rating in that aircraft or already hold that type rating on the person's pilot certificate. In other words, regardless of whether an applicant tests in an aircraft or tests in an FSTD, if the applicant furnishes an aircraft (or aircraft represented) that requires a type rating for the practical test, then the applicant must be eligible for the type rating practical test[252] unless the applicant already holds the type rating.

The general procedures for practical tests are set forth in § 61.43. The FAA finds this is the most appropriate place to clarify the relationship between an ATP practical test and a type rating practical test. Therefore, the FAA proposes new paragraph (g) to clarify that a practical test for an ATP certificate with category and class ratings (if a class rating is required) in an aircraft that requires a type rating, or in an FSTD that represents an aircraft that requires a type rating, includes the same tasks and maneuvers as a practical test for a type rating. This proposed change would foreclose the concept that a lesser test can be administered for category and class ratings at the ATP certificate level.

Finally, the FAA proposes a conforming amendment applicable to those examiners who are authorized by the Administrator to conduct practical tests.[253] Specifically, the proposed new § 61.47(d) would restrict an examiner from conducting a practical test for the issuance of an initial category and class rating (if a class rating is required) in an aircraft that requires a type rating (or corresponding FSTD) to an applicant who does not already have the type rating unless, first, the applicant meets the eligibility requirements for a type rating and, second, the practical test contains the tasks

---

[252] The FAA notes that the practical test for an ATP certificate with category and class ratings is the same test for a type rating. The FAA speaks in its regulations to "concurrent" tests because it is not possible to have successfully completed the testing requirements for category and class ratings at the ATP certificate level in an aircraft requiring a type rating without also completing the requirements for a type rating.

[253] *See* 49 U.S.C. 44702(d), which gives the Administrator the authority to delegate a matter related to the examination, testing, and inspection necessary to issue a certificate under part 61.

for a type rating specified for the areas of operation at the airline transport pilot certificate level. The FAA also proposes to revise the heading of § 61.47 to more accurately describe the regulations set forth in the section. The FAA notes that an examiner may never conduct a practical test if an applicant does not meet the eligibility requirements for the certificate or rating sought.[254] However, the FAA wishes to clarify that an applicant cannot avoid the training requirements for a type rating by "seeking" only a category and class rating at the ATP certificate level. The proposed change would make clear that an examiner may not conduct a practical test in an aircraft that requires a type rating unless the applicant is eligible for the type rating.

The FAA finds that the three regulations, in tandem, will sufficiently ensure that a scenario is avoided where someone seeks a category or class rating in an aircraft that requires a type rating without fully demonstrating mastery of the aircraft furnished for the practical test. The FAA notes that in the case of an airplane or rotorcraft, an applicant retains the option of furnishing an aircraft that does not require a type rating if the applicant seeks only category and class ratings. For powered-lift, which as proposed would all require type ratings, an applicant would be foreclosed from seeking a powered-lift category rating without concurrently obtaining a type rating.

H. Miscellaneous Amendments

1. Aeronautical Experience for Private Pilot Applicants (§ 61.109(e)(5))

Section 61.109 sets forth the aeronautical experience requirements that an applicant must meet to be eligible for a private pilot certificate. Section 61.109 contains several paragraphs that prescribe specific aeronautical experience requirements for the

[254] For example, if an examiner is presented with an applicant for a commercial pilot certificate who has only 100 hours total flight time, no test may be administered due to the applicant's ineligibility for the practical test.

respective rating sought. Specifically, for airplane single-engine and helicopter ratings, § 61.109(a) and (c) require 10 hours of solo flight time in the category and class of aircraft for which the rating is sought. Similarly, for an airplane multiengine rating, § 61.109(c) requires 10 hours of solo flight time in any airplane. However, for a powered-lift category rating, § 61.109(e)(5) currently allows an applicant to obtain 10 hours of solo flight time in either an airplane or a powered-lift.[255]

As discussed, the FAA added the aeronautical experience requirements for powered-lift in the 1997 final rule.[256] In the preamble to that final rule, the FAA explained that it was permitting an applicant for a powered-lift rating to accomplish solo flight time in an airplane or powered-lift in response to concerns raised by commenters regarding the ability for a pilot to rent or be insured to fly solo in a multiengine aircraft without holding a multiengine rating.[257] At the time of the 1997 final rule, the FAA could not anticipate the manner in which the powered-lift category would emerge.

As noted earlier in the preamble, the FAA anticipates that the initial powered-lift that will obtain type certification are intended for commercial purposes. However, a number of manufacturers are also engaged in developing powered-lift that would be for personal use. As explained in section V.A of this preamble, the FAA proposes to require a type rating for each powered-lift because it is not feasible to establish classes of powered-lift due to their significantly different flight characteristics. Because there are no powered-lift classes, and the FAA declines at this time to differentiate between multiengine and single engine powered-lift classes,[258] the FAA finds that the lack of a

---

[255] Specifically, § 61.109(e)(5) requires 10 hours of solo flight time in an airplane or powered-lift consisting of at least: (1) five hours of cross-country time; (2) one solo cross-country flight of 150 nautical miles total distance with three full-stop landings at three points and one segment of the flight consistent of a straight-line distance of more than 50 nautical miles between takeoff and landing locations; and (3) three takeoffs and landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport that has an operating control tower.

[256] Pilot, Flight Instructor, Ground Instructor, and Pilot School Certification Rules, Final Rule, 62 FR 16220 (Apr. 4, 1997).

[257] Id. at 16264-65.

[258] See section VII.A of this preamble for additional discussion.

multiengine powered-lift class rating would not preclude a pilot from renting a powered-lift. Additionally, to the extent a pilot may obtain a multiengine airplane rating, the FAA finds that holding such a rating would not provide any assurance that the pilot has the skills necessary to operate a powered-lift. The FAA, therefore, finds that the concerns noted in the 1997 preamble are no longer valid. Furthermore, permitting a private pilot applicant to obtain 10 hours of solo flight time in an airplane for the purpose of obtaining a powered-lift category rating presents a significant safety issue because airplane and powered-lift are two very different categories of aircraft.

As discussed in section V.A of this preamble, not only do different powered-lift vary widely within the respective category, they are essentially a hybrid between an airplane and a helicopter. When flying an airplane, the applicant will never encounter the vertical take-off and landing characteristics fundamental to a powered-lift. The most critical phases of flight for airplanes and helicopters, and where most accidents occur, are during the takeoff and landing phases of flight.[259] For example, improper application of an airplane's flight controls at slow airspeeds could result in a stall and spin event, oftentimes resulting in accidents. Similarly, improper application of flight control inputs during the takeoff and landing in a helicopter can result in loss of control. For example, during takeoff, a helicopter encounters aerodynamics events such as effective translational lift and transverse flow effect that are specific to a rotor system transitioning from hovering to forward flight.[260] These anomalies require specific inputs to assure that a safe transition to forward flight can occur during takeoff and transition to en route flight. The FAA anticipates that the most critical phases of flight for powered-lift will also be during the takeoff and landing phases of flight. It is important for a private pilot

[259] Phase of Flight for General Aviation Accidents, 2018 Aviation: Data & Stats (ntsb.gov).
[260] Helicopter Flying Handbook, Helicopter Flying Handbook (FAA-H-8083-21B) Chapter 2, pages 2-22 and 2-23.

applicant to gain experience with the operating characteristics of a powered-lift as the sole occupant onboard during the takeoff and landing phases of flight.

In light of the different operating capabilities of airplanes compared to powered-lift, the FAA concludes that the skills acquired during solo flight time in an airplane are not interchangeable with the skills acquired during solo flight time in a powered-lift.[261] An applicant for a private pilot certificate seeking a powered-lift rating must obtain experience operating the powered-lift on solo flights to ensure the applicant has a sufficient amount of aeronautical experience manipulating the controls of the powered-lift as the sole occupant. This flight time is critical to the development of a skilled, safe pilot as it fosters the applicant's decision-making skills, enables the applicant to reinforce the skills acquired during training as the sole manipulator of the controls, and ensures the applicant develops the skills necessary to operate the powered-lift during the critical phases of flight.

For the reasons stated previously, the FAA is proposing to amend § 61.109(e)(5) to require an applicant for a private pilot certificate with a powered-lift category rating to obtain 10 hours of solo flight time in a powered-lift. In addition to providing an adequate level of safety, requiring the applicant to obtain solo flight time in the category of aircraft for which the rating is sought would ensure consistency with the aeronautical experience requirements in § 61.109 that apply to persons seeking airplane and helicopter ratings.

2. Removal of §§ 61.63(h) and 61.165(g)

Before 2004, § 61.31 allowed a pilot to operate an experimental aircraft carrying passengers without a category and class rating when permitted by the aircraft's operating

[261] The FAA acknowledges that a recent final rule permits military powered-lift pilots to credit time in horizontal flight in a powered-lift toward the airplane requirements for an ATP certificate. This final rule was based on the operational similarities between military powered-lift in horizontal flight and airplanes. Allowing an experienced military powered-lift pilot to credit a portion of flight time in powered-lift toward a subset of the time required for an airplane rating at the ATP certificate level is wholly distinguishable from allowing training time in an airplane to be used to satisfy time in a powered-lift at the start of a person's flying experience. Recognition of Pilot in Command Experience in the Military and Air Carrier Operations, Final Rule, 87 FR 57578 (Sep. 21, 2022).

limitations. In 2004, the FAA amended § 61.31 to require persons to hold the appropriate category and class rating when carrying a passenger regardless of the aircraft's airworthiness certificate. The amendment also established a method to credit previous experience gained in an experimental aircraft to ensure pilots complied with the revised provisions.[262] Specifically, to ensure that pilots operating under regulations before the final rule change requiring appropriate category and class ratings complied with the revised provisions, the FAA added §§ 61.63(k) and 61.165(f), which is currently situated as §§ 61.63(h) and 61.165(g). These provisions permit certificated pilots who hold a recreational pilot certificate or higher but do not have a category and class rating to operate the experimental aircraft to apply for a category and class rating with the limitation "experimental aircraft only" and a designation for the make and model aircraft authorized to be operated. Pilots seeking this privilege are required to have logged at least 5 hours of PIC time in the same category, class, make, and model of aircraft issued an experimental certificate. The applicant is required to receive a logbook endorsement from an authorized flight instructor who has determined that they are proficient to act as PIC of the same category and class of aircraft.

Additionally, the FAA required the 5 hours of flight time to have been logged between September 1, 2004, and August 31, 2005. The FAA reasoned that the 5 hours of PIC time received within the 12-month window, as well as the endorsement from a flight instructor, ensures recent experience and necessary skills in the category and class of experimental aircraft that the applicant intends to operate. Upon satisfaction of these requirements, the FAA will issue the applicant a new pilot certificate with the additional category and class rating and the limitation "experimental aircraft only" without any further testing.

---

[262] Certification of Aircraft and Airmen for the Operation of Light-Sport Aircraft, Final Rule, 69 FR 44772, 44829 (Jul. 27, 2004). This amendment was adopted as § 61.31(k)(2)(iii)(B), but is currently codified as § 61.31(l)(2)(iii)(B). 74 FR 42499, 42548.

After more than 15 years since initial codification, the FAA anticipates that individuals that were operating under the pre-2004 requirements have already utilized §§ 61.63(h) and 61.165(g) to obtain a limited category and class rating. As a result, the FAA proposes to remove §§ 61.63(h) and 61.165(g). The FAA notes that these subsections would be removed upon the effective date of the final rule. Therefore, any certificate holders that have not yet obtained a limited category and class rating under §§ 61.63(h) and 61.165(g), but wish to do so, would have until that date to utilize the provisions.

3. ATP Privileges and Limitations (§ 61.167)

Section 61.167 prescribes the privileges and limitations for an ATP certificate holder. Currently, under § 61.167(a)(2), a person who holds an ATP certificate and has met the aeronautical experience requirements of § 61.159 or § 61.161 and the age requirements of § 61.153(a)(1) may instruct other pilots in air transportation service in accordance with the requirements set forth in § 61.167(a)(2)(i) through (iv). Section 61.159 contains the aeronautical experience requirements for an applicant seeking an ATP certificate with an airplane category and class rating, and § 61.161 contains the aeronautical experience requirements for an applicant seeking an ATP certificate with a rotorcraft category and helicopter class rating. Currently, because § 61.167(a)(2) references only §§ 61.159 and 61.161, the privileges for ATPs set forth in § 61.167(a)(2) do not extend to an ATP certificate holder who has met the aeronautical experience requirements for powered-lift in § 61.163.[263] As such, powered-lift ATPs may not instruct in accordance with § 61.167(a)(2)(i) through (iv).

As explained in section V.F of this preamble, § 61.3(d)(3)(ii) permits a person to instruct in accordance with an approved training program under part 135 without holding a flight instructor certificate, provided that person holds an ATP certificate with the

[263] Section 61.163 contains the aeronautical experience requirements for an applicant seeking an ATP certificate with a powered-lift category rating.

ratings appropriate to the aircraft in which training is given. The FAA is therefore proposing to amend § 61.167(a)(2) to include a reference to the aeronautical experience requirements in § 61.163. This proposed amendment would ensure that persons who obtain an ATP certificate with the appropriate powered-lift ratings may instruct other pilots in air transportation service in powered-lift, consistent with what is permitted for persons who hold an ATP certificate with either airplane or helicopter ratings. The FAA notes that, under proposed § 194.205, the proposed change to § 61.167(a)(2) would not permit an ATP with powered-lift ratings to conduct training in the part 135 operator's airman certification curriculum proposed in § 194.243(a).

4. Second-in-command Time in Part 135 Operations

In 2018, the FAA issued a final rule that amended § 135.99 to allow a certificate holder to receive approval of an SIC professional development program (SIC PDP).[264] An SIC PDP allows the certificate holder's pilots to log SIC time in certain operations[265] conducted under part 135 in an airplane or operation that does not otherwise require an SIC.[266] As described in that final rule, a comprehensive SIC PDP provides opportunities for beneficial flight experience that may not otherwise exist. Recognizing the benefits of that flight time, the FAA also amended §§ 61.159 and 61.161 to allow a pilot to credit SIC time logged under an SIC PDP towards certain flight time requirements for an ATP certificate with an airplane category or a rotorcraft category and helicopter class rating.[267] In the NPRM that preceded the 2018 final rule,[268] the FAA acknowledged the value of pilot experience gained by airmen who have been properly trained to serve as SIC in the

---

[264] Regulatory Relief: Aviation Training Devices; Pilot Certification, Training, and Pilot Schools; and Other Provisions final rule, 83 FR 30240 (Jun. 27, 2018).
[265] Under an SIC PDP, the aircraft must be either a multiengine airplane or a single-engine turbine-powered airplane. See 14 CFR 135.99(c)(2).
[266] Prior to the 2018 final rule, a person serving as SIC in a part 135 operation could log SIC time only if more than one pilot was required under the type certification of the aircraft or the regulations under which the flight was being conducted. 14 CFR 61.51(f)(2).
[267] Regulatory Relief: Aviation Training Devices; Pilot Certification, Training, and Pilot Schools; and Other Provisions: Final Rule, 83 FR 30240 (Jun. 27, 2018).
[268] Regulatory Relief: Aviation Training Devices; Pilot Certification, Training, and Pilot Schools; and Other Provisions NPRM, 81 FR 29728 (May 12, 2016).

air carrier environment. In Public Law 111-216, Congress directed the FAA to ensure that applicants for an ATP certificate have received flight training, academic training, or operational experience that will prepare the pilot to, among other things, function effectively in a multipilot environment, adhere to the highest professional standards, and function effectively in an air carrier operational environment. The FAA determined that permitting pilots to credit SIC time logged under an SIC PDP, which provides an appropriate training and mentoring environment, towards the flight time requirements for ATP certification would support the congressional directive and provide an effective method to acquire experience for ATP certification. Additionally, the experience acquired under an SIC PDP would provide a strong foundational experience for the development of a professional pilot.

For the same reasons, the FAA concludes that a pilot should be able to credit SIC time logged under an SIC PDP towards an ATP certificate with a powered-lift category rating as is allowed for pilots applying for an ATP certificate with an airplane category or a rotorcraft category and helicopter class rating. Specifically, the FAA proposes to amend § 61.163 to add paragraph (c) to allow SIC time logged under an SIC PDP to be counted towards the total time as a pilot required by § 61.163(a) and the specific flight time requirements for ATP certification set forth in § 61.163(a)(1), (2), and (4) (e.g., cross-country time, night flight time, and instrument flight time). A person may not credit the SIC time logged under an SIC PDP towards the powered-lift-specific flight time requirements of § 61.163(a)(3) because the aircraft operated under an approved SIC PDP must be a multiengine airplane or a single-engine turbine-powered airplane. The proposed amendment to § 61.163 would ensure that a commercial pilot can log SIC flight time acquired under a SIC PDP towards an ATP certificate with a powered-lift category

rating in the same manner as currently allowed for an ATP certificate with an airplane category rating or a rotorcraft category and helicopter class rating.[269]

The FAA notes that the International Civil Aviation Organization (ICAO) currently has a standard for logging flight time to meet the standards for certificates and ratings that does not recognize the crediting of flight time when a pilot is not required by the aircraft certification or the operation under which the flight is being conducted. However, ICAO currently has only recommended practices, as opposed to standards, for minimum flight time requirements for powered-lift ratings. If these ICAO recommended practices become standards prior to the FAA's publication of a final rule, the pilots who rely on flight time logged under an SIC PDP to meet the requirements for an ATP certificate with a powered-lift category rating must have a limitation on their ATP certificates indicating that they do not meet the PIC aeronautical experience requirements of ICAO. This limitation may be removed when the pilot presents satisfactory evidence that they have met the new ICAO standards.[270] The FAA proposes to add paragraphs (d) and (e) to § 61.163 to include the requirement for the ICAO limitation and the requirements for removing the limitation, under the assumption that the ICAO recommendations for powered-lift will become the ICAO standards for powered-lift in the future. The FAA will reevaluate the status of ICAO's powered-lift experience provisions prior to issuing a final rule to determine whether the proposed rule language in §61.163(d) and (e) are necessary.

5. References to Category and Class

The FAA has identified several regulations in part 61 that contain references to the category and class of aircraft. As previously explained, the FAA is not establishing

[269] This proposal would not enable a part 135 operator to seek approval of an SIC PDP in powered-lift. The FAA is not proposing changes to the aircraft requirements for an SIC PDP set forth in § 135.99(c).
[270] See Regulatory Relief: Aviation Training Devices; Pilot Certification, Training, and Pilot Schools; and Other Provisions NPRM, 81 FR 29728 (May 12, 2016).

classes of powered-lift. As a result, the requirements that must be met for the appropriate class of aircraft would present a problem for powered-lift pilots. For example, because a powered-lift pilot would hold a category rating but not a class rating, that pilot would not be able to satisfy requirements, such as § 61.3(e), that require the person to hold the appropriate category and class rating. Additionally, because there would be no classes of powered-lift, persons would be unable to satisfy the requirements for an aircraft, flight simulator, or FTD to represent the category and class of powered-lift. The FAA is therefore proposing to update the regulatory references to category and class throughout part 61 to make clear that the reference to class is only appropriate if the regulations require classes for the category of aircraft.[271] The following sections would be amended to reflect this change: §§ 61.3(e)(1) and (2), (f)(2)(i) and (ii), and (g)(2)(i) and (ii); 61.45(a)(1)(i) and (a)(2)(ii); 61.51(f)(2); 61.57(a)(1)(ii), (b)(1)(ii), and (g)(1) and (4); and 61.64(a)(1) and (g)(1).

The FAA has also identified numerous provisions in part 141 and its appendices that reference category and class of aircraft. The qualification requirements for chief flight instructor, assistant flight instructor, and check instructor contained in §§ 141.35(a)(1), 141.36(a)(1), and 141.37(a)(2)(ii) require that the person hold a commercial pilot certificate or ATP certificate and a current flight instructor certificate. For flight training, these certificates must contain the appropriate aircraft category, class, and instrument ratings (if required) for the category and class of aircraft used in the course. For checks and tests related to ground training, to be eligible to be designated as a check instructor, § 141.37(a)(3)(ii) requires the person to hold a current flight instructor certificate or ground instructor certificate with the ratings appropriate to the category and

[271] See 14 CFR 61.5(b) (prescribing the various ratings that are placed on a pilot certificate, other than student pilot, when an applicant satisfactorily accomplishes the training and certification requirements for the rating sought).

class of the aircraft used in the course.[272] Additionally, the course content contained in the appendices also references class of aircraft, which is inapplicable when a powered-lift is used in a course of training. The references to class of aircraft in these provisions pose the same issues as the references to class in part 61 for powered-lift pilots (i.e., powered-lift pilots would be able to satisfy requirements for category ratings, but not class ratings).

However, the FAA has determined that a different approach would best address the references to class throughout part 141. The only regulatory requirements that reference class are those qualification requirements discussed previously. The FAA proposes § 194.241, which would remove the qualification requirement to hold a class rating in §§ 141.35(a)(1), 141.36(a)(1), and 141.37(a)(2)(ii) and (a)(3)(ii) when a powered-lift is used in the course. Additionally, proposed § 194.241(a) and (b) would delineate the certificates and aircraft ratings a person must hold to be designated as a chief instructor, an assistant chief instructor, or a check instructor (for checks and tests that relate to flight training and ground training) when a powered-lift is used in the course. As discussed in section V.A of this preamble, due to the significant operational differences between each powered-lift, the FAA is not establishing classes of powered-lift but is instead requiring the PIC of a powered-lift to hold a type rating for the aircraft. Therefore, in delineating the ratings that must be held on the pilot certificate for persons seeking designation as a chief instructor, an assistant chief instructor, or a check

[272] The FAA recognizes that category and class ratings are not placed on a ground instructor certificate. Rather, pursuant to § 61.5(d), the FAA places basic, advanced and instrument ratings on a ground instructor certificate. Therefore, the requirement to hold the appropriate category and class ratings on an instructor certificate in § 141.37(a)(3)(ii) applies to persons who hold a flight instructor certificate. The FAA is not proposing any permanent amendments to part 141 in this rulemaking. Thus, the FAA is not proposing to update § 141.37(a)(3)(ii) at this time. However, the FAA may contemplate a clarifying amendment to § 141.37(a)(3)(ii) in a future rulemaking.

instructor (for checks and tests that relate to flight training), the FAA proposes to add the requirement that a person must hold a powered-lift type rating.[273]

Other than the qualification requirements in §§ 141.35(a)(1), 141.36(a)(1), and 141.37(a)(2)(ii), the references to class in part 141 exist in the appendices. Each appendix contains content pertaining to a course of training for a certificate or rating. For the same reasons previously discussed, the FAA proposes § 194.249(b) that would make the references to class contained in course content in the appendices to part 141 inapplicable when a powered-lift is used for a course of training. This SFAR provision would accurately and comprehensively resolve each problematic reference to class in the appendices to part 141. Additionally, it would provide the FAA time to assess which permanent changes will be needed in the appendices to part 141 to accommodate the use of powered-lift in the certification and rating courses long-term.

In addition to the class references identified in parts 61 and 141, there are several class references throughout subpart K of part 91 and parts 135 and 142 that pose challenges for powered-lift pilots, program managers, training centers, and other affected persons and entities. Under subpart K of part 91, § 91.1055(b)(2) references class of aircraft. Section 91.1055(b)(2) allows deviation from flight-time hour requirements for PICs and SICs operating program flights if an existing program manager adds a new category and class of aircraft to its fleet not used before in its operation. In the absence of classes for powered-lift, fractional ownership program managers could not utilize this deviation authority. To remedy the discrepancy posed by the reference to the aircraft

[273] This proposed requirement provides additional clarity regarding the need for these instructors to hold a powered-lift type rating to receive these designations. Under the part 141 regulations discussed in this section and the proposed SFAR provision of § 194.241, to be designated a chief instructor, assistant chief instructor, or a check instructor (for checks and tests that relate to flight training), a current flight instructor certificate must be held. A person who holds a flight instructor certificate is subject to the limitations contained in § 61.195. Specifically, § 61.195(e) prohibits a flight instructor from giving training in an aircraft that requires the PIC to hold a type rating unless the flight instructor holds a type rating for the aircraft on their pilot certificate for that aircraft. Because a PIC of a powered-lift would be required to hold a type rating, to provide flight training in a powered-lift, the flight instructor would be required to hold a type rating for the powered-lift as well.

class requirement in this section, the FAA proposes § 194.245(b) to clarify that this reference to class is inapplicable when a powered-lift is used for the operation under subpart K of part 91.

Under part 135, §§ 135.4(b)(2), 135.247(a)(1) and (2), and 135.603 also reference class of aircraft. Specifically, § 135.4(b)(2) closely aligns with the text of § 91.1055(b)(2)—allowing deviation from certain crewmember experience requirements if the certificate holder adds to its fleet a new category and class of aircraft not used before in its operation. Section 135.247(a)(1) and (2) require a PIC in an aircraft carrying passengers to make three takeoffs and landings, and three additional takeoffs and landings for operations after sunset and before sunrise, as the sole manipulator of the flight controls in an aircraft of the same category, class, and type, if a type rating is required, in which that person is to serve. Finally, § 135.603 requires the PIC of a helicopter air ambulance operation to meet the requirements of § 135.243 and to hold either a helicopter instrument rating or an ATP certificate with a category and class rating for that aircraft, not limited to VFR.[274]

These class references would similarly pose challenges for part 135 certificate holders. Therefore, for the same reasons as described above, the FAA proposes § 194.249(a) to clarify that these references to class are inapplicable when a powered-lift is used for the operation under part 135.

Lastly, under part 142, §§ 142.11(d)(2)(ii), 142.49(c)(3)(iii), 142.53(b)(1), and 142.65(b)(1) reference class of aircraft. As a result, training center certificate holders and instructors would be unable to apply for issuance or amendment of training specifications, comply with instructor and certificate holder privileges and limitations, or satisfy the instructor training and testing requirements. As a result, the FAA proposes

[274] The FAA proposes that § 135.603 apply to powered-lift conducting operations in accordance with subpart L of part 135 under proposed § 194.308(n). *See* VI.D.1.vi (explaining rationale for applying § 135.603 to powered-lift operations).

§194.249(c) to clarify that references to class of aircraft in these sections do not apply when operating powered-lift or flight simulation devices representing powered-lift under part 142.

I. Part 135 Pilot Qualifications

1. Statement of the Issue & Introduction

On December 7, 2022, the FAA proposed revisions to 14 CFR parts 110 and 119 to enable powered-lift operations in part 135.[275] The potential introduction of powered-lift in part 135 operations requires the FAA to propose updates to current crewmember training and qualification requirements in that part.[276] The current regulatory framework in subparts A, E, G, and H of part 135 was initially codified without contemplation of powered-lift operations. Unlike part 61, the 1997 final rule that first introduced powered-lift in 14 CFR did not include updates to part 135.[277] Such changes were unnecessary due to the fact that powered-lift could not operate in part 135. Consequently, the FAA's current proposal to amend part 135 includes introducing powered-lift into the regulatory training and qualification paradigm, rather than simply updating or modifying existing powered-lift requirements.

To integrate the operation of these unique aircraft into the existing part 135 crewmember training and qualification structure, the FAA proposes a two-fold amendatory framework, proposing both permanent regulatory amendments and temporary SFAR requirements. The FAA's proposed SFAR requirements are intended to facilitate the training and qualification of the initial groups of part 135 pilots, flight instructors, and check pilots. In many instances, the training and qualification requirements applicable to airplane pilots in part 135 would also be applied to powered-

---

[275] Update to Air Carrier Definitions NPRM, 87 FR 74995.
[276] Section VI of this NPRM sets forth the proposed changes to the operational rules for powered-lift in parts 91 and 135.
[277] Pilot, Flight Instructor, Ground Instructor, and Pilot School Certification Rules, 62 FR 16220 (Apr. 4, 1997).

lift pilots.[278] Due to the energy or fuel consumption while operating vertically in a powered-lift, the FAA anticipates that powered-lift will quickly transition to horizontal flight utilizing the wings like an airplane to afford powered-lift a much larger operational range and faster speeds to optimize operational capabilities. Resultantly, powered-lift pilots must possess many of the same skills and experience as their airplane pilot counterparts.[279]

At the same time, some of the FAA's proposals recognize the operational differences in the capability of powered-lift and the associated challenges of integrating a new category of aircraft into the NAS for civilian use. Given these known operational distinctions, there are instances where existing airplane or helicopter training and qualification pilot rules do not readily apply. For example, some powered-lift flight control designs differ from both conventional airplane and helicopter controls, necessitating specific training and qualification requirements to ensure proper pilot handling and safety during flight. In those cases where neither airplane nor helicopter training and qualification rules fit the operational capabilities of powered-lift, the FAA proposes new temporary or permanent requirements designed to facilitate the readiness of powered-lift pilots to safely integrate into the NAS. The FAA's SFAR proposals and permanent amendments seek to balance the demand for safety in part 135 operations while recognizing the operational uniqueness of powered-lift and encouraging the integration of these new aircraft operations under this part.

---

[278] For example, the proposed permanent amendments to § 135.243(a)(3) and (b)(5) are similar to the PIC qualifications for airplane pilots in § 135.243(a)(1) and (b)(3).

[279] The FAA recently published a final rule permitting military pilots and former military pilots to credit flight time in horizontal flight in powered-lift toward the flight time requirements for an ATP certificate with an airplane category rating. Commenters to that rule estimated that military pilots operate powered-lift in horizontal flight between 80-99% of the time. Recognition of Pilot in Command Experience in the Military and Air Carrier Operations, 87 FR 57580 (Sep. 21, 2022).

2. Relevant History & Background

Part 135 prescribes operating requirements for commuter and on-demand operations. Specifically, subpart A prescribes the operations and personnel that are affected by the part, and subpart E details flight crewmember qualification requirements. Subparts G and H set forth the testing and training requirements for crewmembers.

On October 10, 1978, the FAA substantially amended the part 135 regulations that governed commuter air carriers and on-demand air taxi operators.[280] These regulations were enacted to update the requirements of part 135 in response to anticipated growth in operations stemming from legislative efforts to deregulate the airline industry.[281] In particular, the FAA anticipated the passage of the Airline Deregulation Act of 1978 and sought to update its regulations prior to the Act's codification.[282] In that Act, Congress mandated that the FAA modify its regulatory framework to ensure commuter air carriers afford passengers the same level of safety as that granted to passengers travelling on other certificated carriers.[283] As a result of the FAA's prior rulemaking in anticipation of this legislation, no further amendments were necessary after the Act's promulgation.[284]

In 1980, the FAA updated the part 135 operating experience requirements again, explaining that fatal accidents continued to occur even after the FAA's 1978 amendments.[285] Pilot training and testing requirements were further refined in 1995 to ensure the training, testing, and currency requirements met the expectations of safety for

---

[280] Regulatory Review Program; Air Taxi Operators and Commercial Operators, 43 FR 46742, 46783 (Oct. 10, 1978).
[281] See Air Taxi Operators and Commercial Operators; Commuter Pilot in Command Operating Experience Requirements, 45 FR 7540 (Feb. 4, 1980) (explaining 1978 update to part 135 regulations).
[282] Id.
[283] Airline Deregulation Act of 1978, Pub. L. 95-504, 49 U.S.C. 1301 (October 24, 1978).
[284] Air Taxi Operators and Commercial Operators; Commuter Pilot in Command Operating Experience Requirements, 45 FR 7540 (Feb. 4, 1980).
[285] Id. (citing 13 fatal accidents in commuter air carrier operations during 1979).

commercial operations.[286] To effectuate this goal, the FAA's 1995 rulemaking amended the training and checking requirements under part 135 to align with the more rigorous and comprehensive part 121 standards.[287]

The FAA's prior amendments to part 135, and its continued efforts to enhance the level of safety required to operate under that part, inform its present proposals. In proposing the SFAR requirements and permanent amendments to accommodate the entry of powered-lift into operations under part 135, the FAA maintains its longstanding commitment to ensuring safety and mitigating the risk of commuter and on-demand accidents and incidents. In this regard, the FAA's SFAR and permanent proposals for crewmember training and qualification programs under part 135 are intended to provide an equivalent level of training, checking, and testing for powered-lift operations as those imposed for airplanes and helicopters.

3. Section 135.3 - Rules applicable to operations subject to this part

Section 135.3 prescribes the rules that apply to persons conducting operations under part 135. Specifically, § 135.3(b) is specific to commuter operations[288] under part 135 and requires certificate holders conducting such operations with airplanes for which two pilots are required by the aircraft type certification to comply with the training and qualification requirements in subparts N and O of part 121 instead of the training and qualification requirements for part 135. When § 135.3(b) was proposed in 1994, the FAA

---

[286] Commuter Operations and General Certification and Operations Requirements, 60 FR 65940, 65941 (Dec. 20, 1995).
[287] Id.
[288] Under part 110, "commuter operation" is defined as any scheduled operation conducted by any person operating one of the following types of aircraft with a frequency of operations of at least five round trips per week on at least one route between two or more points according to the published flight schedules: airplanes, other than turbojet-powered airplanes, having a maximum passenger-seat configuration of 9 seats or less, excluding each crewmember seat, and a maximum payload capacity of 7,500 pounds or less; or rotorcraft. The FAA has proposed in a related rulemaking to revise this definition to include powered-lift, other than turbojet-powered powered-lift, that have a maximum passenger-seat configuration of 9 seats or less, excluding each crewmember seat, and a maximum payload capacity of 7,500 pounds or less. 87 FR 74995 (Dec. 7, 2022). The FAA's current proposal corresponds to the regulations proposed in the Update to Air Carrier Definitions NPRM enabling powered-lift operations in part 135. Consistent with the Administrative Procedure Act, the FAA will consider all significant comments received in response to the Update to Air Carrier Definitions NPRM and adjust both proposals as necessary based on public comment.

sought to reduce accidents and incidents related to human performance in commuter operations.[289] To facilitate more comprehensive training requirements and alleviate the prevalence of human error, the FAA's 1995 final rule imposed the subpart N and O training requirements that are reflected in the current regulation.[290]

In comparing the two training regimes, the FAA noted that, compared to part 121 training regulations, part 135 training rules do not provide a balanced mix of training and checking because part 135 allows the repeated substitution of flight checks in lieu of training. The FAA further stated that part 121 training and qualification regulations require both recurrent training and flight checks. Subsequently, the FAA explained that the more comprehensive training and checking paradigm imposed under part 121 for these part 135 commuter operations, instead of the requirements maintained in subparts E, G, and H of part 135, was necessary to enhance public and passenger safety.[291]

The FAA finds that the same safety standard imposed in § 135.3(b) for commuter operations involving airplanes for which two pilots are required by type certification should apply to powered-lift requiring two pilots by type certification. Notably, however, subparts N and O of part 121 are multiengine airplane specific, and, at this time, the FAA is not amending part 121 to accommodate powered-lift operations. In the absence of amending subparts N and O to accommodate powered-lift-specific training and checking, appendices E (Flight Training Requirements) and F (Proficiency Check Requirements) to

---

[289] Air Carrier and Commercial Operator Training Programs, 59 FR 64272 (Dec. 13, 1994).

[290] On December 20, 1995, the FAA published two final rules both addressing operations under parts 121 and 135. One rule established new part 119 and required certain commuter operations that had been conducted under part 135 (i.e., scheduled passenger-carrying operations in airplanes that have passenger-seating configurations of 10 to 30 seats) to be conducted under part 121. See 60 FR 65832 (Dec. 20, 1995). The second rule required operators that conduct commuter operations with airplanes for which two pilots are required by aircraft type certification rules to train and qualify their pilots using the requirements in subparts N and O of part 121 rather than the training and qualification requirements in part 135. See 60 FR 65940 (Dec. 20, 1995).

[291] Air Carrier and Commercial Operator Training Programs, 59 FR 64272, 64272-73 (Dec. 13, 1994).

part 121 would mandate that a powered-lift flightcrew perform some airplane-specific tasks that are incongruent with powered-lift operational capabilities.[292]

For example, under appendix E to part 121, powered-lift PICs would be required to complete flight training on zero-flap landings. However, some powered-lift coming to market may not be designed with flaps and, therefore, PICs operating these powered-lift could not complete the training required under subpart N. Moreover, powered-lift may be capable of performing additional tasks, such as running or roll-on landings, not contemplated in appendices E and F to part 121. Thus, if subparts N and O were applied to powered-lift as written, PICs could be insufficiently trained and checked on some maneuvers that powered-lift possess the operational capability to conduct.

For each of these reasons, instead of applying training and qualification rules focused on multiengine airplanes to powered-lift, the FAA is proposing § 194.247(b) to create an alternative means of compliance with § 135.3(b) for certificate holders conducting commuter operations under part 135 with powered-lift requiring two pilots by type certification. For these operations, the FAA proposes that certificate holders comply with subpart Y of part 121, the Advanced Qualification Program (AQP). This proposal will enable a pathway for these commuter operations in powered-lift to meet a higher level of safety than meeting the training and qualification requirements in subparts G and H of part 135 without imposing the inapt multiengine airplane requirements of subparts N and O on powered-lift commuter operators in part 135.

The proposal for powered-lift pilots to comply with the AQP requirements accords with the FAA's intent when codifying the original rule requiring certificate holders operating airplanes requiring two pilots by type certification in part 135 commuter operations to comply with subparts N and O of part 121. Principally, the 1995

---

[292] In accordance with § 121.424 of subpart N, flight training must include at least the maneuvers and procedures specified in appendix E to part 121. In accordance with § 121.441 of subpart O, proficiency checks must include at least the maneuvers and procedures specified in appendix F to part 121.

final rule mandated that certain part 135 commuter operators comply with subparts N and O of part 121 because the part 135 training requirements imposed a lesser standard, allowing flight checks to be substituted for required training.[293] The FAA finds that, in lieu of modifying subparts N and O of part 121 to accommodate the integration of certain powered-lift commuter operations, AQP can be utilized to ensure a similarly rigorous safety standard for training and checking is maintained.

For example, AQP employs scenario-based training and evaluations and integration of safety program data to maintain the most effective training for each certificate holder. Unlike traditional aviation training, AQP uses data-informed and data-driven improvement. It encourages innovation in the methods and technology that are used during instruction and evaluation. AQP allows for customized training to the certificate holder's unique demographic and flight operation while integrating crew resource management and evaluating both the individual and crew's performance. In addition, AQP provides a trained-to-proficiency model that uses planned hours, similar to the rigorous training and checking paradigm imposed under subparts N and O of part 121.

While the requirements delineated in the AQP are not identical to the checking and training standards imposed in subparts N and O of part 121, the use of an AQP will exceed the part 135 commuter training and checking standards that would otherwise apply. As a result, the FAA proposes the use of AQP to promote a higher safety standard than that imposed under part 135, to more closely align with the training and checking required under subparts N and O of part 121. The FAA notes that the proposal to utilize an AQP is temporary. As additional information becomes available on the training and checking necessary to effectuate safety for certain part 135 commuter powered-lift

---

[293] See Commuter Operations and General Certification and Operations Requirements, 60 FR 65832, 65940 (Dec. 20, 1995).

operations, the FAA will revise this standard as appropriate. In short, the FAA proposes the AQP requirement to elevate the existing part 135 training and checking standards, while recognizing its use as a temporary measure until additional information is available to facilitate a permanent solution tailored to the most appropriate training and checking for pilots in commuter operations involving powered-lift for which two pilots are required by type certification.

In addition, the 1995 final rule that imposed this requirement for airplanes emphasized the "greater flexibility" afforded by part 121 and the "more effective mix of training and checking activities" available.[294] Like subparts N and O, the AQP framework increases flexibility in training, including the approval of alternative methods for training, certifying, and ensuring the competency of crewmembers and other personnel.[295] The FAA reasons that the AQP—a program designed to accommodate innovative and advancing technology[296]—provides an appropriate alternative pathway to ensure quality training and checking of powered-lift pilots while they are currently unable to follow subparts N and O in part 121 as prescribed for airplanes in § 135.3(b).

For each practical test requirement of part 61 or regulatory requirement of part 121 or 135 that is replaced by an AQP, subpart Y requires that the certificate holder detail how the AQP curriculum provides an equivalent level of safety to the part 135 training and qualification requirements.[297] AQP uses performance data to continually improve the training and qualification program. All approvals are conducted jointly between the certificate management office and the Air Transportation Division with input from all the members of the extended review team (ERT). The ERT includes subject matter experts that are not frequently available to assist Principal Operations Inspectors on training

---

[294] Commuter Operations and General Certification and Operations Requirements, 60 FR 65832, 65940-41 (Dec. 20, 1995).
[295] See 14 CFR 121.901(a).
[296] Advanced Qualification Program, 70 FR 54809, 54810 (Sep. 16, 2005).
[297] 14 CFR 121.909(b).

program approvals and revisions. For each of these reasons, the FAA finds that it can ensure adequate oversight and safety for operators in which an AQP is required for powered-lift and maintain a similar level of safety while accommodating the emerging technology and operational uniqueness of powered-lift.

In addition to proposing that powered-lift commuter operations with two pilots required by type certification comply with AQP in subpart Y of part 121, the FAA also proposes in § 194.247(b)(2) that these PICs receive training, instruction and facilitated discussion on leadership and command and mentoring as part of their initial, recurrent, and upgrade ground training, similar to the initial, recurrent, and upgrade ground training requirements that govern airplane commuter operations. Proposed § 194.247(b)(2)(ii) requires that mentoring training include techniques for instilling and reinforcing the highest standards of technical performance, airmanship, and professionalism in newly hired pilots. This leadership and command and mentoring training would be required in recurrent ground training for PICs every 36 calendar months. Additionally, proposed § 194.247(b)(4) includes requirements for initial and upgrade flight training for PICs to contain sufficient scenario-based training incorporating crew resource management and leadership and command skills, to ensure the pilot's proficiency as PIC. The FAA includes these additional training requirements to equate the training received by powered-lift pilots under subpart Y of part 121 to that required for PICs in airplane commuter operations in which two pilots are required by type certification.[298]

The FAA reasons that the use of an AQP, coupled with the additional proposed requirements in the SFAR, will provide powered-lift pilots with the knowledge and skills that are required for a similar level of safety. In short, the FAA seeks to balance the

[298] As previously described, pilots serving in airplane commuter operations in which two pilots are required by type certification must be trained in accordance with subpart N of part 121. Leadership and command and mentoring training is required by subpart N of part 121 during PIC initial, upgrade, and recurrent training. See 14 CFR 121.420, 121.426, and 121.427.

unique training, checking, and operational characteristics associated with powered-lift while maintaining similar training and checking requirements as that provided in subparts N and O of part 121. The FAA proposes to effectuate this intent through the AQP in subpart Y of part 121, enabling a flexible and customizable training option for pilots of powered-lift in which two pilots are required by type certification.[299] Additional information on the safety benefits and suggested compliance mechanisms for the AQP are available in the FAA's AQP Advisory Circular No. 120-54A.

4. Section 135.4 - Applicability of Rules for Eligible on-demand Operations

Section 135.4 prescribes two-pilot flight crew experience and pairing requirements for eligible on-demand operations conducted under part 135. As currently written, § 135.4 applies to powered-lift, with the exception of § 135.4(a)(3), which specifies its applicability to fixed-wing aircraft. Section 135.4(a)(3) prescribes the operating limitations for an SIC of fixed-wing aircraft that has fewer than 100 hours of flight time as SIC in the aircraft make and model, and if a type rating is required, in the type aircraft being flown. If the SIC does not have the requisite flight time and the PIC is not an appropriately qualified check pilot, the PIC is required to make all takeoffs and landings in the situations that are detailed in paragraphs (a)(3)(i) and (ii). The FAA requires the PIC to make all takeoffs and landings in the situations listed in paragraphs (a)(3)(i) and (ii) because safety could be compromised if flown by a lesser-experienced SIC.[335]

Powered-lift have the potential for increased complexity of operation over fixed-wing aircraft during the approach and landing phases of flight, and this can especially hold true during the situations that are listed in paragraphs (a)(3)(i) and (ii). To ensure

[299] The training requirements in subparts E, G, and H of part 135 will apply to pilots of powered-lift in which one pilot is required by type certification.

that safety is not compromised during the approach and landing phases of flight, a certain amount of familiarity with an aircraft is required. The FAA maintains that the familiarity required for SICs should not be reduced for powered-lift as compared to fixed-wing aircraft. The crew pairing and operational limitations required by this section are designed to ensure the flightcrew possess the necessary familiarity and experience to safely operate in less-than-ideal conditions or when using the provisions of § 135.385(f). Therefore, to ensure the highest level of safety for powered-lift, the FAA is proposing in § 194.309 that current § 135.4(a)(3) would apply to powered-lift under the SFAR.

5. Section 135.243 - Pilot in Command Qualifications

Section 135.243 prescribes qualifications for pilots serving as PIC in certain passenger-carrying part 135 operations,[300] passenger and cargo flights under VFR,[301] and passenger and cargo flights under IFR,[302] which include minimum certificates, ratings, and hours of pilot time, cross-country time, night flight time, and, if applicable, actual or simulated instrument time. A portion of the PIC requirements in § 135.243 apply to all aircraft.[303] Therefore, these minimum requirements that apply to PICs of all aircraft in part 135 will also apply to PICs of powered-lift in part 135 when powered-lift operations under part 135 are enabled.

i. Section 135.243(a)

Section 135.243(a) prescribes the general requirements for a person to serve as PIC in certain passenger-carrying operations. Specifically, to serve as PIC in a passenger-carrying operation of (1) a turbojet airplane, (2) an airplane with a passenger-seat configuration of 10 seats or more, or (3) a multiengine airplane in a commuter operation, § 135.243(a)(1) requires a person to hold an ATP certificate with appropriate category

---

[300] 14 CFR 135.243(a).
[301] 14 CFR 135.243(b). See also 14 CFR 135.243(d), which provides that § 135.243(b)(3) does not apply in certain conditions provided in § 135.243(d)(1) through (7).
[302] 14 CFR 135.243(c).
[303] 14 CFR 135.243(b)(1) and (2) and (c)(1) and (2).

and class ratings and, if required, an appropriate type rating for that airplane.[304] Similarly, § 135.243(a)(2) requires a person to hold an ATP certificate, appropriate type ratings, and an instrument rating to serve as PIC in passenger-carrying operations for helicopters in scheduled interstate air transportation within the 48 contiguous states.

The FAA first proposed that certain operations under part 135 should require an ATP certificate in 1977.[305] In that NPRM, the requirement to hold an ATP certificate to act as PIC in some part 135 operations was based in part on operational complexity and the number of persons carried. The FAA reasoned that the ATP certificate would provide a level of safety more comparable to that provided by part 121. In the 1978 final rule, the FAA concluded that there would be increased safety benefits by requiring PICs of the more complex, passenger-carrying operations under part 135 to hold an ATP certificate.[306]

Currently, § 135.243(a) applies only to airplane and helicopter operations. This paragraph does not prescribe higher certificate requirements for PICs in certain passenger-carrying powered-lift operations because powered-lift cannot yet operate in part 135. Consequently, under the current regulatory framework of § 135.243, the requirements to serve as PIC of a powered-lift in certain passenger-carrying operations would be determined under paragraphs (b) and (c) based on whether the operation is conducted under VFR or IFR. Under those provisions, a PIC of a powered-lift would be required to hold only a commercial pilot certificate with a powered-lift category rating (and a type rating, if applicable).[307] Without a regulatory change, there would be less

---

[304] By definition, a commuter operation is a passenger-carrying operation. See 14 CFR 110.2 (defining scheduled operation and commuter operation).
[305] Part 135 Regulatory Review Program; Air Taxi Operators and Commercial Operators, 42 FR 43490, 43491 (Aug. 29, 1977).
[306] Regulatory Review Program; Air Taxi Operators and Commercial Operators, 43 FR 46742, 46772 (Oct. 10, 1978).
[307] Currently, § 135.243 does not prescribe an instrument rating requirement for powered-lift PICs. Instead, § 135.243(b) requires an instrument rating for PICs of airplanes and helicopters conducting VFR operations. However, § 61.3(e) requires a PIC operating in IFR to hold an instrument rating, including the PIC of a powered-lift.

stringent PIC requirements for powered-lift in more complex, passenger-carrying operations than those required to serve as PIC of an airplane or helicopter.

To accord the qualification requirements for PICs in powered-lift with those imposed for airplanes and helicopters, the FAA proposes to permanently add paragraph (a)(3) to § 135.243. This paragraph proposes to require the PIC of a powered-lift to hold an ATP certificate with a powered-lift category rating and an appropriate type rating not limited to VFR for that powered-lift, when serving as PIC in: (1) on-demand passenger-carrying turbojet-powered powered-lift operations; (2) on-demand operations in a powered-lift having a passenger seating configuration, excluding crewmember seats, of ten or more; and (3) powered-lift commuter operations other than turbojet-powered powered-lift (hereinafter collectively referred to as "certain part 135 commuter and on-demand powered-lift operations").

In support of the proposed ATP certificate requirement, the FAA proffers four reasons. First, as described in the recently published Update to Air Carrier Definitions NPRM, turbojet-powered powered-lift may be used in transoceanic, long range and international operations, similar to turbojet-powered airplanes. For this reason, the Update to Air Carrier Definitions NPRM proposes that the same part 121 provisions that apply to scheduled turbojet-powered airplanes should apply to scheduled turbojet-powered powered-lift to ensure consistency in applying the appropriate risk mitigation measures for operations of turbojet-powered aircraft.[308] To maintain consistency of risk mitigations, the FAA proposes that PICs of on-demand passenger-carrying turbojet-powered powered-lift operations must hold an ATP certificate consistent with the requirement for PICs of on-demand passenger-carrying turbojet airplane operations. At present, the FAA does not anticipate the integration of turbojet-powered powered-lift into the civilian market.

---

[308] Update to Air Carrier Definitions, NPRM, 87 FR 74995 (Dec. 7, 2022).

Second, the FAA's proposed requirement for powered-lift PICs to hold an ATP certificate and type rating for on-demand operations involving ten or more passenger seats aligns with the rationale for prescribing this requirement for airplane PICs. When codifying this requirement for airplanes, the FAA sought to accommodate additional operational factors that were not initially contemplated for airplane design.[309] The FAA reasoned that airplane operations with 10 or more passenger seats were operating near or over maximum certificated takeoff weight (MCTW) of 12,500 pounds, and that additional airworthiness requirements in part 23 would need to ensure the airworthiness equivalent to aircraft with a type certification of 12,500 pounds. Changes in part 23 differentiated small aircraft to those limited to 9 seats or less, and larger aircraft as those with at least 10 seats or weighing over 12,500 pounds. Similar to type-certificated aircraft that were over 12,500 pounds, the airplanes that had 10 seats or more were larger, flew for a longer duration of time, carried more people, had MCTW at or over 12,500 pounds, required more robust pilot training and certification, and had to comply with more stringent airworthiness requirements.

The rationale in support of these requirements for PICs of airplanes involving ten or more passenger seats applies equally to powered-lift. The FAA expects that on-demand operations involving powered-lift with ten or more passenger seats will also involve larger aircraft that fly for a longer duration of time and have the capacity to carry more people. Thus, the FAA proposes that PICs in on-demand operations piloting powered-lift that possess ten or more passenger seats meet similar certification requirements as those imposed for airplane PICs in these operations.

Third, powered-lift will share many operational similarities as multiengine airplanes and, therefore, a similar certification and type-rating requirement is necessary to

---

[309] Airworthiness Standards: Reciprocating and Turbopropeller Powered Multiengine Airplanes, 43 FR 46742, 46734 (Oct. 10, 1978).

ensure safety in powered-lift commuter operations. For example, like powered-lift, multiengine airplanes have more complicated and complex operating systems, additional gauges and differing cockpit setups, more advanced aerodynamics, operate at a faster speed and higher altitudes, and require more pilot training to handle normal operations and emergency situations.

When the FAA codified the certification requirements for multiengine airplanes under § 135.243(a)(1), it explained that these credentials were necessary because the requirement hinged on the complexity of aircraft that were currently operating under part 135 and their respective passenger-carrying capability.[310] Like the requirements imposed for multiengine airplanes, increased safety benefits will be provided by requiring PICs of more complex operations under part 135 to hold an ATP certificate. In part, powered-lift PICs will also be expected to have more robust knowledge and training to operate in complex environments to ensure the greatest level of safety.

Fourth, and relatedly, the operational environment that powered-lift PICs must navigate for commuter operations necessitates that all pilots possess a background of training and experience that allows them to adapt to complex environments when encountering varying operating conditions. Specifically, part 135 commuter powered-lift operations will often be conducted under IFR in high-traffic areas with greater frequency involving complex aircraft, requiring precision handling and skilled maneuvers to navigate these complex and challenging operational environments. The ATP certificate requirement ensures that powered-lift PICs obtain knowledge of the skills, aptitudes, airmanship, and suitability through additional aeronautical experience, to effectively serve as PIC in these environments while also meeting the public interest and safety expectations. These certificate requirements ensure that powered-lift PICs accumulate

[310] Regulatory Review Program; Air Taxi Operators and Commercial Operators, 43 FR 46742, 46783 (Oct. 10, 1978).

additional flight time to develop the expertise necessary to maintain the higher level of safety required to operate under part 135 commuter powered-lift operations. The circumstances in which a powered-lift PIC must possess an ATP certificate and type rating not limited to VFR are similar to those imposed for airplane pilots.

Next, in addition to holding an ATP certificate, proposed § 135.243(a)(3) also requires that powered-lift PICs hold a type rating for the powered-lift flown, not limited to VFR. Under the VFR-only type rating proposal discussed in section V.H of this preamble, pilots can opt to take their instrument rating practical test within two calendar months from the month in which they passed the type rating practical test in a powered-lift. Despite this testing flexibility, the FAA is proposing not to allow a PIC with a powered-lift VFR-only type rating to serve in part 135 operations including those operations in § 135.243(a). As explained further in the subsequent section, the skills and experience required for an instrument rating are necessary to ensure safety in part 135 operations. The instrument rating ensures that PICs of powered-lift possess the proper training, experience hours in simulated and actual instrument conditions, and operational knowledge to safely conduct flight in operating environments where pilot error can be immediately critical, such as in inadvertent instrument conditions or areas of lower visibility.

In proposing this requirement, the FAA also notes its corresponding proposed permanent amendment to § 61.31(a), requiring the PIC in powered-lift operations to hold a type rating. Because the FAA proposes a permanent amendment to codify the type-rating requirement for powered-lift pilots under part 61, the FAA also proposes that its amendment to § 135.243(a) be permanent, rather than temporary. To promote consistency between the requirements for certain airplane, helicopter, and powered-lift PICs, and congruency between the requirements of parts 61 and 135, the FAA proposes to

permanently add § 135.243(a)(3) to codify the type-rating requirement for PICs of powered-lift during certain part 135 commuter and on-demand powered-lift operations.

As the FAA collects additional data and information throughout the SFAR period, it may further evaluate the requirements currently proposed. For example, the FAA expects to gather data regarding the industry standardization of powered-lift cockpit setup and a more robust understanding of powered-lift operational capabilities. When this information becomes available, the FAA may propose subsequent amendments to modify the certification standards for powered-lift PICs under proposed § 135.243(a)(3).

The FAA also notes that, with powered-lift newly entering the civilian market, PICs may be unable to initially meet the flight time and experience requirements for an ATP certificate.[311] In turn, powered-lift PICs may not immediately possess the credentials necessary to participate in certain part 135 commuter operations and on-demand powered-lift operations. If a powered-lift PIC does not satisfy the ATP certificate requirements, they would be limited to conducting part 135 on-demand operations with non-turbojet-powered powered-lift containing less than 10 passenger seats, until the ATP certificate requirements are satisfied.

As PICs gain flight time in on-demand operations, they can obtain the experience necessary to satisfy the ATP certificate requirements. At most, the FAA expects that powered-lift PICs will gain the necessary flight time and experience to qualify for an ATP certificate within a few months,[312] causing a minimal delay to integration of powered-lift into the full part 135 commuter and on-demand framework. This marginal delay in enabling full part 135 operations is necessary to ensure pilots conducting certain

---

[311] As noted in section V.F of this preamble, the FAA anticipates that pilots will not initially be able to meet the 250 hours in a powered-lift as a PIC, or as a SIC performing the duties of a PIC under the supervision of a PIC, or any combination thereof.

[312] In reaching this conclusion, the FAA reasons that, if all other aeronautical experience and regulatory requirements are met, it would take an additional 200 hours of flight time as PIC in a powered-lift to qualify for an ATP certificate. The FAA estimates that pilots may fly, on average, 50 hours a month. In estimating 50 hours a month, it would take approximately four months to satisfy the powered-lift specific flight time requirement for an ATP certificate.

complex, passenger-carrying operations possess the appropriate experience to safely serve in this capacity.

Lastly, the FAA notes that, in 2011, the FAA transferred the definitions contained in § 119.3 to a new part 110.[313] However, the FAA did not revise the corresponding references in § 135.243(a)(1) or § 135.244(a) at that time. These sections both reference part 119 for the definition of "commuter operation." Therefore, the FAA proposes a permanent change to replace the reference to "part 119" with "part 110" in §§ 135.243(a)(1) and 135.244(a).

ii. Section 135.243(b) and (c)

Section 135.243(b) and (c) establish the minimum pilot certificate, ratings, and flight time that a PIC must have when conducting part 135 VFR operations and part 135 IFR operations, respectively, except as specified in § 135.243(a). Specifically, to serve as PIC of an aircraft under VFR or IFR, a person must have at least a commercial pilot certificate with appropriate category and class ratings and, if required, an appropriate type rating for that aircraft under § 135.243(b)(1) and (c)(1). Paragraphs (b)(2) and (c)(2) prescribe the minimum flight hour requirements for serving as a PIC under VFR and IFR. The experience, certificate, ratings, and flight time requirements delineated in § 135.243(b)(1) and (2) and (c)(1) and (2) apply generally to pilots of an aircraft conducting operations under VFR and IFR. Therefore, these requirements will apply to PICs of powered-lift in part 135, and the FAA proposes only minor edits to paragraphs (b)(1) and (c)(1) to include reference to a powered-lift-specific type rating not limited to VFR.

Section 135.243, paragraphs (b)(3) and (4) and (c)(3) and (4), however, prescribe airplane- and helicopter-specific requirements for instrument ratings. The regulation does not include corresponding requirements detailing when powered-lift PICs must hold an

[313] Operations Specifications, 76 FR 7482, 7483 (Feb. 10, 2011).

instrument rating or ATP certificate when conducting VFR or IFR operations.[314] As a result, the FAA proposes to add new paragraphs (b)(5) and (c)(5) to impose parallel permanent requirements for powered-lift operations under VFR and IFR. Proposed paragraph (b)(5) would require the PIC of a part 135 VFR operation in a powered-lift to hold an instrument-powered-lift rating or an ATP certificate for the powered-lift category. Proposed paragraph (c)(5) would require the PIC of a part 135 IFR operation in a powered-lift to hold an instrument-powered-lift rating or an ATP certificate with a powered-lift category. The FAA proposes these paragraphs to codify a regulatory framework that promotes consistency among airplane, helicopter, and powered-lift requirements, while simultaneously crafting rules that are specifically tailored to the unique operating characteristics of each category of aircraft.

The proposed addition of paragraph (c)(5) requires similar PIC credentials to serve in IFR operations as that imposed for PICs piloting airplanes and helicopters. For IFR operations, § 61.3(e) mandates that a PIC operating in IFR hold an instrument rating. By contrast, proposed paragraph (b)(5), which governs VFR operations, would mirror the requirements currently maintained for PICs serving in VFR airplane operations in part 135 rather than the requirement for VFR helicopter operations.

The FAA finds that an instrument rating is necessary in VFR powered-lift operations to ensure the pilot has the necessary skills in the event of an emergency situation involving an inadvertent encounter with IMC. The FAA requires an instrument rating for part 135 VFR airplane operations[315] because, if an airplane encounters

---

[314] As discussed in section V.J of this preamble, a person must hold an instrument rating to apply for an ATP certificate. As such, an ATP certificate itself is evidence of an instrument rating. Therefore, a pilot may hold an instrument rating on a commercial pilot certificate or an ATP certificate as both convey instrument privileges.

[315] Section 135.243(d) provides a limited exception allowing a PIC to conduct part 135 VFR single engine-reciprocating-powered airplane operations in an isolated area as determined by the Administrator if the operation meets the specified requirements and is approved in the certificate holder's operations specifications. The FAA approves these operations in operations specification A020, Airplane Operations Without Instrument Rated Pilots. As of October 2022, there are four part 135 operators, with a total of nine

inadvertent IMC, the pilot must have the necessary skills to maintain safe control of the airplane, coordinate with ATC, and maneuver the airplane to an emergency instrument approach and landing at an airport.

Conversely, the greater maneuverability and special flight characteristics of a helicopter provides a helicopter pilot with more options for corrective actions and permits a helicopter pilot to make those corrective actions in less time and distance than required for most airplanes. Additionally, the characteristics of a helicopter provide significantly more emergency landing options, enabling a helicopter pilot to make an emergency landing at locations other than an airport or heliport. Therefore, a helicopter pilot has more options available in the event of an emergency situation with inadvertent IMC. These qualities allow a helicopter pilot to operate under VFR in part 135 without an instrument rating at lower visibility and cloud clearance distances, while maintaining the same degree of safety as airplanes flying under more restrictive minima.

The FAA anticipates that, other than necessary for takeoff and landing, many powered-lift will prefer to utilize lift provided by the wing for as long as practical in order to gain efficiencies in fuel consumption, speed, and range. Since powered-lift will likely operate similar to an airplane in cruise flight, in the event of inadvertent IMC, the powered-lift pilot will require more time and distance to escape the IMC and complete an emergency approach and landing compared to a helicopter. Additionally, unlike other aircraft categories, most powered-lift may have to transition from flight on the wing to flight on the rotors or other thrust devices to conduct approach and landing operations. The FAA expects the transition of a powered-lift from forward flight to vertical flight would not be instantaneous, requiring additional time, distance, and altitude that is unique from other categories of aircraft. Therefore, requiring powered-lift pilots to have an

---

airplanes and seven pilots, with approved operations specification A020. Three of these part 135 operators conduct operations in isolated areas of Alaska and the fourth conducts operations in an isolated area of Maine.

instrument rating during VFR operations similar to the airplane requirements ensures that PICs of powered-lift possess the proper skills to safely conduct flight in the event of an inadvertent encounter with IMC, where pilot error can be immediately critical.

As an alternative to satisfying the instrument rating requirement in proposed paragraphs (b)(5) and (c)(5), the FAA proposes that the PIC may hold an ATP certificate with a powered-lift category rating. The requirement to hold an ATP certificate is consistent with § 61.3(e). Thus, the intent to ensure PICs possess knowledge and familiarity of instrument controls and conditions is similarly effectuated by alternatively requiring an ATP certificate, in lieu of an instrument rating.

The FAA acknowledges that there may be future aircraft designs such that the skill, knowledge, and experience that the instrument rating for VFR operations otherwise brings will no longer be necessary. In addition, the environment where some powered-lift operations occur may be isolated, proving that the instrument rating for VFR operations may be unnecessary to maintain safety. However, until further data is collected through operational use and experience of powered-lift, the FAA proposes to maintain the instrument rating or ATP requirement for powered-lift PICs operating under VFR, to accord the regulation with the requirements imposed for airplanes.

6. Section 135.244 - Operating Experience

Section 135.244 requires a person to complete operating experience in the make and model of aircraft they will fly before serving as PIC in commuter operations. This section, through use of the term "aircraft," applies to powered-lift.[316] However, in prescribing the minimum hours of operating experience required, § 135.244(a) only contemplates single engine aircraft; multiengine, reciprocating engine-powered aircraft; multiengine, turbine-engine powered aircraft; and turbojet-powered airplanes. When this

[316] Update to Air Carrier Definitions, 87 FR 74995 (Dec. 7, 2012).

section was added to the regulatory framework in 1980, the FAA did not forecast the use of powered-lift in commuter operations.[317]

In the 1980 final rule promulgating this section, the FAA crafted differing minimum hour requirements for these varying types of aircraft because of the ranging complexities associated with their operation. For example, the FAA reasoned that single-engine aircraft are generally simple aircraft with less complex operational dynamics. As a result, PICs of these aircraft comply with lesser operating experience requirements than that required for operating the other, more complex, aircraft enumerated in this section. The FAA distinguished the complexity of operating systems based on the aircraft's engine and propulsion characteristics, prescribing correspondingly greater operating experience requirements for increasingly complex aircraft. Complexity, in this regard, was informed by the aircraft's engine and propulsion system.

At present, the FAA expects powered-lift to vary widely in their expected engine makeup and propulsion designs. Some powered-lift entering the market, for example, are expected to use electric engines. Others are expected to use multiengine turbine-engine powered propulsion. And, conversely, some powered-lift may utilize unique propulsion systems that involve distinct features and intricacies, unlike those typically utilized in currently available commuter aircraft altogether. In the absence of uniform propulsion systems and engine characteristics for powered-lift expected to enter the market, the FAA cannot prescribe the operating experience requirements for powered-lift based on the characteristics in § 135.244(a)(1) through (4).

Instead, the FAA proposes to prescribe the operating experience requirements based on the different handling characteristics necessary to pilot powered-lift and the associated complexity anticipated for operating these aircraft in the NAS. In support, the

---

[317] See Air Taxi Operators and Commercial Operators; Commuter Pilot in Command Operating Experience Requirements, 45 FR 7540, 7541 (Feb. 4, 1980).

FAA anticipates the operation of powered-lift will require complex flight and handling qualities, including inceptors and the use of indirect flight controls. Powered-lift may also have different configurations, including tilt-wing, tilt-propeller, lift plus cruise, and tilt plus cruise designs. These unique configurations and inceptors, and potentially diversified flight controls and operating characteristics, inform the FAA's proposal to render these aircraft more akin to multiengine turbine-engine powered airplanes on the complexity scale, rather than their single-engine counterparts.[318]

For these reasons, the FAA proposes in § 194.247(c) to include a 20-hour operating experience requirement to serve as PIC in any powered-lift. To facilitate this operating experience requirement, the FAA proposes to except powered-lift from the current operating experience requirements delineated in § 135.244(a)(1) through (4). As noted above, these specific operating experience requirements do not adequately capture or control the expected complexity of powered-lift, as determined by the varying propulsion systems and engine characteristics.

Nevertheless, the FAA recognizes that, at this time, it is unknown what engine or propulsion system will apply to the majority of powered-lift that integrate the market. As a result, the FAA proposes to mandate the operating experience hour requirements for powered-lift PICs in the SFAR, rather than a permanent rule change. As additional information becomes available, the FAA may modify the 20-hour operating experience requirement to more precisely scale the operating experience to the complexity associated with operating a powered-lift.

7. Section 135.245 - Second in Command Qualifications

Section 135.245 prescribes the SIC qualifications for a pilot in part 135, which includes instrument currency requirements for flights operated under IFR. Section

[318] As discussed in section VI.A of this preamble, the FAA does not anticipate single-engine powered-lift to be developed during the term of this SFAR.

135.245(a) specifies that the minimum requirement for an SIC of an aircraft is at least a commercial pilot certificate with appropriate category and class ratings and an instrument rating. Paragraph (b) does not require the instrument rating for helicopter SICs operating under VFR, except for VFR over-the-top operations. Paragraph (c) prescribes SIC instrument experience requirements for airplane and helicopter pilots. Finally, paragraph (d) details the framework for an SIC to reestablish instrument currency.

i. Section 135.245(a)

Section 135.245(a) prescribes the certification requirements for SICs operating "aircraft." This section, therefore, applies to powered-lift SICs without edit. Given these generally applicable requirements, that an SIC maintain at least a commercial pilot certificate with appropriate category and class ratings and an instrument rating, the FAA does not need to propose modifying paragraph (a) to accommodate the integration of powered-lift. Under the current regulation, a powered-lift SIC would be required to hold a commercial pilot certificate with a powered-lift category rating and an instrument-powered-lift rating.

ii. Section 135.245(b)

Under § 135.245(b), an SIC of a helicopter operated under VFR, other than over-the-top, must have at least a commercial pilot certificate with an appropriate aircraft category and class rating. Because the FAA proposes that powered-lift SICs comply with paragraph (a), the FAA does not propose changing the requirements of paragraph (b)—an exception to operations conducted under paragraph (a). The FAA recognizes that paragraph (b) may need to be amended in the future to accommodate powered-lift if these operations prove more congruent to those conducted in helicopters than currently anticipated.

iii. Section 135.245(c)

Paragraph (c) prescribes SIC instrument experience requirements for airplane and helicopter pilots that operate under IFR. Specifically, § 135.245(c)(1) requires SICs to perform six instrument approaches, holding procedures and tasks, and intercepting and tracking courses through navigational electronic systems within six calendar months preceding the month of a particular flight. The requirement for pilots to perform instrument maneuvers and procedures to maintain their instrument privileges is universal throughout the airman regulations. The FAA expects that, like helicopter and airplane SICs, some powered-lift will also operate under IFR. Therefore, the FAA proposes to permanently amend paragraph (c)(1) to specifically include reference to powered-lift. This proposal accords the SIC instrument experience requirements with those imposed for SICs of airplanes and helicopters who serve in IFR operations.

iv. Section 135.245(d)

Finally, § 135.245(d) prescribes how an SIC can reestablish instrument currency. Like § 135.245(a), this paragraph applies to all SICs who serve in IFR operations. Therefore, it applies to powered-lift SICs as written. The FAA does not need to propose an amendment to modify the requirements to reestablish instrument currency to integrate powered-lift into the civilian market.

8. Section 135.247 - Pilot qualifications: recent experience

Section 135.247 specifies the recent takeoff and landing experience that a PIC must complete within the preceding 90 days to carry passengers in an aircraft. Section 135.247(a)(1) requires the PIC to make three takeoffs and landings as the sole manipulator of the flight controls in an aircraft of the same category and class and, if a type rating is required, in that same type of aircraft. For operations at night,

§ 135.247(a)(2) also requires the takeoffs and landings to have been completed at night.[319]

Under § 135.247(a)(3), the PIC of a turbine-powered airplane type-certificated for more than one pilot may complete an alternative to the night takeoff and landing requirements. To complete an alternate path, a PIC must serve as PIC of a turbine-powered airplane that is type-certificated for more than one pilot crewmember and comply with the requirements listed in the regulation. The first alternative allows pilots to maintain night currency through the performance of three takeoffs and landings to a full stop over a 6-month period. The second alternative allows pilots to maintain night currency through the performance of 6 takeoffs and landings to a full stop in a simulator training program approved under part 142.

Based on the active certification projects for powered-lift, the FAA currently expects that a majority of powered-lift will not be type-certificated for more than one pilot crewmember. Because most powered-lift will likely require only one pilot by type certification, the purpose and text of § 135.247(a)(3) is inapplicable. In addition, even for powered-lift that may require two pilots by type certification, the FAA expects that most powered-lift PICs will be unable to satisfy the 1,500 hour aeronautical experience requirement to qualify for this alternative approach currently permitted for pilots of turbine-powered airplanes type certificated for more than one pilot crewmember. Due to the small number of expected two-pilot type-certificated powered-lift, and the minimal powered-lift pilot experience the FAA currently expects that pilots have accrued, the FAA does not presently propose extending the alternative experience requirements in § 135.247(a)(3) to powered-lift.

[319] Section 135.247(a)(2) describes night as beginning 1 hour after sunset and ending 1 hour before sunrise as published in the Air Almanac.

Most importantly, the FAA finds that extending alternative currency to all powered-lift type-certificated for more than one pilot would not be in the interest of safety. Each powered-lift may possess different flight controls and operational characteristics, unlike airplanes that have relatively uniform flight controls and cockpit designs among each type. As a result, because a pilot is current in one powered-lift, does not necessarily translate to currency or proficiency in a different powered-lift. Therefore, the FAA is not proposing any amendments to § 135.247(a)(3).

9. Section 135.293 - Initial and recurrent pilot testing requirements

As discussed in section V.G of this preamble, § 135.293 requires pilots to complete initial and recurrent knowledge testing and a flight competency check to serve in part 135 operations. Section 135.293(a)(1) through (9) lists the knowledge areas for the oral or written test, which each pilot must pass. The knowledge areas do not specify airplane- or rotorcraft-specific knowledge testing, except for the provisions included in § 135.293(a)(7) and (9).

Specifically, § 135.293(a)(7) requires knowledge testing on the procedures for identifying, escaping, and avoiding hazardous weather conditions for all aircraft. The rule excepts rotorcraft pilots from the requirement to be tested on escaping from low-altitude windshear due to the unique aerodynamic characteristics of rotorcraft, as stated in § 135.293(a)(7)(ii). Powered-lift may not possess the same unique aerodynamic characteristics as rotorcraft but do share similar aerodynamic characteristics of airplanes. As a result, powered-lift pilots may encounter low-altitude windshear and, resultantly, they must possess the knowledge necessary to recover sufficient altitude to compensate for any corresponding loss of lift. Given these factors, the FAA is not proposing to amend § 135.293(a)(7) which, as currently written, would similarly include powered-lift pilots in the knowledge testing requirements of escaping from low-altitude windshear conditions. This knowledge, and corresponding testing requirements, is equally valuable for

powered-lift pilots to possess, in the event that they, like pilots of airplanes, encounter low-altitude windshear during flight.

Similarly, § 135.293(a)(9) requires testing for rotorcraft pilots on rotorcraft-specific procedures to ensure recognition and avoidance of hazardous visibility conditions. The hazardous visibility conditions that must be tested for rotorcraft pilots under this section include flat-light, whiteout, and brownout conditions. The FAA expects that powered-lift pilots may similarly encounter these conditions during flight. These conditions can be especially critical when flying at low altitude. For example, flat-light can give the pilot an illusion of ascending when the aircraft is actually flying level. Absent knowledge and familiarity of this phenomenon, a pilot may over-correct the perceived ascension and rapidly descend in altitude. This is particularly critical when flying in congested airspace at low altitude over urban or densely populated areas, like the operational environment expected for powered-lift. For these reasons, the FAA finds that these testing requirements should likewise extend to powered-lift pilots. Accordingly, the FAA proposes a permanent change to § 135.293(a)(9).

Section 135.293(b) specifies the requirements for pilots to complete a competency check in practical skills and techniques in the aircraft every 12 calendar months. If a pilot serves in more than one aircraft type, this section also specifies that the categories and classes in which the pilot serves determine whether the pilot must complete a competency check in each aircraft type. For helicopters, multiengine airplanes, and turbojet airplanes, § 135.293(b) prescribes that the check must be completed in the type of helicopter, multiengine airplane, or turbojet airplane in which the pilot will serve.[320] Therefore, if a pilot will serve in more than one helicopter, multiengine airplane, or turbojet airplane, the

[320] Section 135.293(b) contains an allowance that, if determined by the Administrator to have a similar means of propulsion, the same manufacturer, and no significantly different handling or flight characteristics, an airplane type for the purposes of § 135.293(b) could be a group of airplanes. The Administrator has made this determination for a limited number of airplanes; the airplanes that the Administrator has determined fit into a specific group are described in FAA Order 8900.1, Volume 3, Chapter 19, Section 1. Absent this determination, "type" as defined in § 1.1 applies.

pilot must complete a competency check in each aircraft type. Conversely, for single-engine airplanes, other than turbojet, § 135.293(b) only requires a competency check in the specific class (i.e., single-engine land or single-engine sea). As such, a pilot serving in more than one single-engine land airplane is only required to complete one competency check.

Consistent with the proposed requirement that PICs serving in part 135 powered-lift operations hold a type rating for the aircraft flown, the FAA proposes that these pilots must also complete the required competency check in each type of powered-lift that the pilot will fly. This proposed requirement is consistent with the competency check requirements for airplanes and helicopters of similar complexity as powered-lift. Principally, as described in the previous discussion regarding §§ 135.243 and 135.244, the use of unique configurations and inceptors, and potentially diversified flight controls and operating characteristics expected for powered-lift, informs the FAA's conclusion that these aircraft are more akin to multiengine airplanes on the complexity scale, rather than their single-engine counterparts. As previously noted, the FAA is not able at this time to identify sufficient commonality to establish class ratings for powered-lift. Moreover, given the powered-lift currently undergoing the aircraft certification process, the FAA does not anticipate it could reach a determination that any of the initial powered-lift would have a sufficiently similar means of propulsion, the same manufacturer, and significantly similar handling or flight characteristics. Unlike airplane and helicopter operations where the flight controls the pilot uses are generally uniform from one aircraft to the next, experience in category alone does not sufficiently prepare a pilot of a powered-lift. Ensuring the pilot has the requisite knowledge and skill in each powered-lift to be a competent crewmember is necessary to ensure safety. For these reasons, the FAA proposes to permanently revise § 135.293(b) to require pilots to

complete a competency check in the type of powered-lift in which the pilot will serve, like that required for multiengine airplanes.

Section 135.293(c) specifies that each competency check in a rotorcraft must include a demonstration of the pilot's ability to maneuver the rotorcraft solely by reference to instruments and maneuver into visual meteorological conditions (VMC) following an inadvertent encounter with IMC. For competency checks in non-IFR-certified rotorcraft, the pilot must perform such maneuvers as are appropriate to the installed equipment, the certificate holder's operations specifications, and the operating environment. The FAA added this requirement in response to the high number of fatal accidents that have resulted from helicopter inadvertent IMC encounters during VFR operations.[321]

Some powered-lift may be used only in part 135 VFR operations, and the aircraft themselves may not be IFR-equipped. Consequently, powered-lift pilots like helicopter pilots are at risk of encountering inadvertent IMC. These conditions may be immediately critical and may necessitate the powered-lift pilot to initiate emergency procedures to escape the inadvertent IMC. Absent proper knowledge and skill to initiate emergency maneuvers, compounded with the expected operation in congested airspace and low altitude, powered-lift pilots may lack the necessary handling abilities to successfully escape these conditions in a timely fashion. As a result, the FAA proposes to apply the § 135.293(c) evaluation requirement also to powered-lift to ensure these pilots possess the skills needed to handle these conditions. For competency checks in non-IFR-certified powered-lift, the pilot would be required to perform such maneuvers as are appropriate to the installed equipment, the certificate holder's operations specifications, and the operating environment.

---

[321] Air Ambulance and Commercial Helicopter Operations, Part 91 Helicopter Operations, and Part 135 Aircraft Operations, Safety Initiatives and Miscellaneous Amendments, 75 FR 62640, 62668 (Oct. 12, 2010).

Notably, in 2014, when the FAA added § 135.293(a)(9) and (c), the FAA also included specific language in § 135.293(h) requiring compliance after April 22, 2015.[322] Since the compliance date has passed, the FAA proposes a permanent change to remove the compliance date memorialized in § 135.293(h) and reserve this paragraph.

10. Section 135.297 - Pilot in Command: Instrument proficiency check requirements

i. Section 135.297(a) and (b)

Section 135.297 prescribes the instrument proficiency check (IPC) requirements for the PIC of a part 135 IFR operation. Powered-lift operations were not contemplated when this rule was written. However, the rule applies to PICs of any part 135 IFR operation as prescribed in paragraph (a). Paragraph (b) specifies how often the IPC must occur and the kinds of approaches that must be conducted. This paragraph is also not category or class specific. Therefore, the requirements in § 135.297(a) and (b) would apply to powered-lift PICs in part 135 operations as written.

ii. Section 135.297(c)

Section 135.297(c) specifies the content and standards for an IPC that an airplane or helicopter PIC must meet, which corresponds to the minimum certificate requirements prescribed in § 135.243.[323] To align with the proposed requirements to serve as a PIC in part 135 operations, and because all PICs will be expected to hold a type rating for the powered-lift flown, the FAA proposes that the IPC for a powered-lift PIC meet the same requirements as currently required for airplane and helicopter PICs. The FAA proposes

---

[322] Extension of Effective Date for the Helicopter Air Ambulance, Commercial Helicopter, and Part 91 Helicopter Operations Final Rule, 79 FR 22009 (Apr. 21, 2014).

[323] Section 135.297(c) also sets forth required content of the IPC including an oral or written equipment test and flight check under simulated or actual IFR conditions. The equipment test must include questions on emergency procedures, engine operation, fuel and lubrication systems, power settings, stall speeds, best engine-out speed, propeller and supercharger operations, and hydraulic, mechanical, and electrical systems, as appropriate to powered-lift operations. As further described in section VI.A of this preamble, the FAA notes that the term "engine" encompasses any powered-lift propulsion system, such as batteries or electric motors. The flight check includes navigation by instruments, recovery from simulated emergencies, and standard instrument approaches involving navigational facilities which that pilot is to be authorized to use.

that, if the PIC is required to hold an ATP certificate, then the IPC must include the procedures and maneuvers for an ATP certificate, consistent with the existing requirement for airplane PICs in § 135.297(c)(1)(i). Furthermore, the FAA proposes that if the PIC is required to hold a commercial certificate, then the IPC must include the procedures and maneuvers for a commercial certificate with an instrument rating and for the type rating, consistent with the existing requirement for airplane and helicopter PICs in § 135.297(c)(1)(ii). For these reasons, the FAA proposes a permanent amendment to § 135.297(c)(1)(ii) to modify the reference to "airplane" and "helicopter," to "aircraft," to expressly include powered-lift within this provision.

In addition, the FAA has identified an inadvertent error in § 135.297(c)(1)(i) and proposes a permanent correction. Specifically, § 135.297(c) delineates the procedures and maneuvers that are required based on whether the person is serving as a PIC under § 135.243(a) or (c). However, if the person is a PIC under § 135.243(a), § 135.297(c)(1)(i) currently applies to the PIC of an airplane only. Consequently, if a person is serving as a helicopter PIC under § 135.243(a), § 135.297(c)(1)(i) does not state which procedures and maneuvers are required for the IPC. Therefore, the FAA proposes a permanent amendment to § 135.297(c)(1)(i) to change the word "airplane" to "aircraft," making the requirement applicable to any PIC under § 135.243(a). In making this amendment, powered-lift PICs will also fall within the full scope of §§ 135.297(c)(1)(i) and 135.243(a).

iii. Section 135.297(g)

Section 135.297(g) currently sets forth the checking requirements for PICs authorized to use an autopilot system in place of an SIC. In part, this section requires an autopilot check to be completed every 12 months during the PIC's IPC under paragraph (a). Therefore, paragraph (g) applies to powered-lift PICs authorized to use an autopilot system in place of an SIC. Paragraphs (g)(1) and (2) specify the tasks that the PIC must

complete during the autopilot check. Paragraph (g)(3) specifies the standard of proficiency that the PIC must demonstrate during the performance of the tasks required by paragraphs (g)(1) and (2). However, as currently written, paragraph (g)(3) is applicable only to airplane PICs. The FAA asserts that the proficiency standard is applicable to any PIC using an autopilot in lieu of an SIC and therefore is proposing a permanent change to apply paragraph (g)(3) to all aircraft.

The use of the word "aircraft" would encompass airplanes, helicopters, and powered-lift in the checking requirement to show proficiency with autopilot systems installed on the aircraft. In support of this proposed amendment, the FAA notes that helicopter pilots that use autopilot instead of an SIC must already complete an autopilot check during their IPC, under paragraphs (g)(1) and (2). The requirements of paragraph (g)(3) would have minimal impact because proficiency would already have been demonstrated to meet the requirements in paragraphs (g)(1) and (2).

Furthermore, with updated avionics and technology, more helicopters operating under part 135 have an autopilot system installed than when the rule was first promulgated.[324] Thus, advancements in technology now illustrate that this equipment is likewise available and in-use on helicopters. When an autopilot system is installed and its use is contemplated, the check of proficiency must be accomplished to the same standards all other aircraft airmen are required to satisfy. For these reasons, the FAA proposes permanently amending paragraph (g)(3) to require that if the PIC is authorized to use an autopilot system in place of an SIC in any aircraft, the PIC must demonstrate proficiency in its use. Modifying paragraph (g)(3) to require the same checking standard for proficiency as that required for airplane pilots will ensure all PICs are checked on

[324] See i.e., Special Federal Aviation Regulation No. 108—Mitsubishi MU-2B Series Airplane Special Training, Experience, and Operating Requirements, 73 FR 7034, 7042 (Feb. 6, 2008) (explaining that "in most of today's modern cockpits, aircraft that are permitted to be operated with a single pilot are required to have a functional autopilot installed").

autopilot systems to the same standard. To provide sufficient time for existing rotorcraft operators to update their checking programs, if necessary, the FAA proposes a compliance date of six months after the effective date of the final rule for this subsection

11. Section 135.340 - Initial and transition training and checking: Flight instructors (aircraft), flight instructors (simulator)

Section 135.340 prescribes initial and transition training for instructors in aircraft and simulators. As currently written, this section applies to powered-lift flight instructors. As described in section V.G of this preamble, the FAA is proposing a temporary provision to allow a part 135 operator to seek approval to establish and implement an airman certification training curriculum. As part of that temporary provision, the FAA proposes that a person must hold a flight instructor certificate issued under part 61 with the appropriate ratings to provide training for the purpose of adding a powered-lift category rating, type rating, or an instrument rating to a commercial pilot certificate under a part 135 approved training program. This determination is based on (1) the lack of powered-lift experience held by pilots completing the part 135 training program, and (2) the curriculum content required for the issuance of a commercial pilot certificate with a powered-lift category rating, type rating, and an instrument-powered-lift rating. Additionally, to ensure the ATP privileges contained in § 61.167(a) are not expanded as a result of the SFAR, a temporary limitation that would prohibit a person who holds an ATP certificate with powered-lift ratings from instructing other pilots in accordance with an approved airman certification training program under part 135 for the purpose of obtaining a commercial pilot certificate with a powered-lift category rating or an instrument-powered-lift rating. Together, these two provisions would ensure that a part 135 instructor holds a flight instructor certificate with the appropriate powered-lift ratings when providing the foundational part 61 airman certification training in a powered-lift. The proposed rule language has been scoped to ensure that the current part 135 training

environment is not altered by the SFAR. Accordingly, the FAA does not propose any amendment to § 135.340.

12. Section 135.345 - Pilots: Initial, transition, and upgrade ground training

Section 135.345 sets forth the requirements for initial, transition, and upgrade ground training for pilots and includes a list of minimum items of instruction that must be completed as applicable to their duties. Currently, the regulation discusses general items that apply to all aircraft. However, § 135.345(b)(6)(iv) requires training on operations during ground icing conditions for airplanes only if the operator authorizes takeoffs in ground icing conditions. The FAA is proposing that the training requirements in § 135.345(b)(6)(iv), including ground icing, deicing/anti-icing procedures, and surface contamination training, be required for pilots of powered-lift, in addition to pilots of airplanes.

In support, the FAA reasons that powered-lift—like airplanes—may encounter ground icing in operations, and the pilots must be properly trained if the operator authorizes takeoffs in ground icing conditions. The FAA recognizes that aircraft icing is an aviation safety issue and, accordingly, knowledge of these conditions will ensure powered-lift pilots, like their airplane counterparts, are equipped to respond appropriately.[325] Therefore, to mitigate safety risks and accommodate the integration of powered-lift under this section, the FAA proposes to apply the airplane requirements under § 135.345(b)(6)(iv) to powered-lift.

This proposed amendment is also consistent with the FAA's proposal to extend the airplane operational requirements under § 135.227 for ground icing conditions to powered-lift discussed in section VI.D of this preamble. In proposing the amendment to § 135.227, the FAA reasoned that some powered-lift may contain sophisticated aviation

[325] See i.e., NTSB Aviation Accident Final Report, Accident No. SEA07LA041 (finding probable cause of helicopter accident was due, in part, to "snow and ice ingestion").

technology and, in turn, possess the capability to operate during ground icing conditions. As a result, the FAA proposes to extend § 135.345(b)(6)(iv) to conform the regulation with the training that will now be required under the proposed expanded scope of § 135.227.

J. Part 142 Training Centers

The FAA proposes to amend part 142 requirements for training centers to accommodate powered-lift. These amendments will harmonize requirements for airplanes, powered-lift, and rotorcraft. The amendments are necessary because the existing regulatory framework does not reflect contemporary training and checking methods. As discussed in section V.F above, part 142 was originally codified in 1996 to enable training centers to provide standardized quality training, testing, and checking to any individual, operator, or air carrier. The final rule contained requirements for conducting training in an FSTD but did not address powered-lift because there were no powered-lift in civil use at that time.

However, in the years since part 142 was codified, significant technological advancements in aircraft design have occurred, including the development of civil use powered-lift. Along with the development of powered-lift, sophisticated training devices for powered-lift are being developed to allow for training under part 142, which is currently permitted for airplanes and rotorcraft. The FAA recognizes the value of FSTD training and seeks to provide a method to accomplish FSTD training for powered-lift, to enhance safety and serve the public interest. Therefore, the FAA proposes to amend §§ 142.11(d)(2)(iii), 142.47(c)(2), 142.53(b)(2) and (3), and 142.57(c) to permit the use of FSTDs for powered-lift training, testing, and checking. These amendments will also harmonize the eligibility and testing requirements for instructors providing inflight training in powered-lift as well as in an FSTD for all aircraft categories.

1. Subpart A - General Requirements

Subpart A prescribes the requirements governing the certification and operation of training centers, and provides an alternative means to accomplish the training required by 14 CFR part 61, 63, 65, 91, 121, 125, 135, or 137.

Section 142.11 details the application requirements for issuance of a new or amended training center certificate and training specifications.[326] Specifically, § 142.11(d)(2)(iii) states that training specifications issued to a training center must include the FSTDs that the training center is authorized to use, including the qualification level, and the make, model, and series of airplane or rotorcraft being simulated in the FSTD. The FAA expects training centers to utilize powered-lift FSTDs for training, testing, and checking similar to current uses of airplane and rotorcraft FSTDs.

Therefore, the FAA proposes amending § 142.11(d)(2)(iii) to include powered-lift. The regulatory text would be amended to state that training specifications issued by the Administrator to the certificate holder must contain the make, model, and series of aircraft, or set of aircraft being simulated and the qualification level assigned. With this amendment, training centers would be able to apply for training specifications and receive authorization for the use of FAA qualified powered-lift FSTDs, in addition to existing airplane and rotorcraft requirements.

2. Subpart C - Personnel and Flight Training Equipment Requirements

Subpart C prescribes the personnel and flight training equipment requirements for a certificate holder that is providing training to meet the requirements of part 61. Section 142.47 prescribes the requirements for instructors in an approved flight training course. The rule requires each instructor to satisfactorily complete ground training on the subjects identified in paragraph (c)(1) prior to functioning as an instructor in a course. The rule

[326] As defined in 14 CFR 142.3, training specifications are a document issued to a training center certificate holder by the Administrator that prescribes that center's training, checking, and testing authorizations and limitations, and specifies training program requirements.

further states in § 142.47(c)(2)(ii) that a written test is also required and must be of equivalent difficulty, complexity, and scope as the tests provided by the Administrator for the flight instructor airplane and instrument flight instructor knowledge tests.

Although airplane is specified, the FAA asserts that the flight instructor knowledge tests for powered-lift and rotorcraft would provide the most comprehensive and relevant knowledge items that are specific to those categories of aircraft. An aircraft category-specific test allows the instructor to demonstrate the knowledge and expertise the FAA considers appropriate for a part 142 training center to provide for a specific category of aircraft. This is consistent with the original intent of part 142 to establish a quality source of standardized training and testing for instructors. Therefore, the FAA finds it is necessary to amend the rule to include these categories of aircraft.

Accordingly, the FAA proposes to amend § 142.47(c)(2)(ii) to require that a training center instructor complete a written test that is the equivalent difficulty, complexity, and scope as the FAA flight instructor and instrument flight instructor knowledge tests applicable to the specific category of aircraft in which the instructor will be qualified. The proposed amendment will ensure that powered-lift, airplane, and rotorcraft training center instructors are adequately tested and qualified, and that the test they complete contains the appropriate scope of material applicable to the category of aircraft in which they will instruct.

Section 142.53 prescribes training center instructor training and testing requirements. Under paragraph (b), each instructor who instructs in an FFS that the FAA has approved for all training and testing for the ATP certification test or aircraft type rating test must meet one of three requirements prior to designation and every 12 calendar months thereafter. Of these three requirements that an instructor may meet to satisfy § 142.53(b), two of the three are airplane specific. Specifically, § 142.53(b)(2)(i) and (b)(3)(i) are specific to airplanes and do not include powered-lift or rotorcraft. As a result,

powered-lift and rotorcraft FFS instructors are currently limited to a single compliance option under § 142.53(b)(1), which requires FFS instructors to conduct inflight operations to maintain recency of experience.

Section 142.53(b)(1) requires the instructor to perform two hours in flight, including three takeoffs and three landings as the sole manipulator of the controls of an aircraft of the same category and class, and, if a type rating is required, of the same type replicated by the approved FFS in which that instructor is designated to instruct. The FAA recognizes that satisfaction of this inflight experience requirement may pose a challenge for FFS instructors that do not hold a medical certificate. For those individuals, another qualified person would have to accompany the instructor to act as PIC in the aircraft because, without a medical certificate, the FFS instructor would not be qualified to serve as PIC. As a result, some experienced instructors that do not hold a medical certificate may be excluded from serving as an FFS instructor. The FAA's current proposal to afford FFS instructors additional options other than satisfying the inflight experience requirement provides greater flexibility for powered-lift and rotorcraft FFS instructors, like that provided for their airplane FFS instructor counterparts.

The FAA acknowledges that inflight operations provide many training benefits and improve pilot confidence and competence. Pilots are able to maintain their skills in the actual operating environment, improve their decision making, maintain situational awareness, and exercise crew resource management. However, the FAA also considers that a line-observation program as described in § 142.53(b)(2), or an inflight observation program as specified in § 142.53(b)(3), provide equivalent training and experience for FFS instructors. This allows all FFS instructors (regardless of ability to actively access inflight operations) the opportunity to be immersed in the operational environment. Observation programs are beneficial for airplane FFS instructors and the FAA asserts these programs will be equally beneficial for powered-lift and rotorcraft FFS instructors.

The FAA anticipates that powered-lift FFSs will have advanced technology, visual cues, and be able to replicate flight to the same degree as current FFSs used for airplanes. The FAA believes powered-lift instructors should have the same flexibility to comply with any of the three enumerated options in this section. Additionally, rotorcraft FFSs also incorporate advanced technology, similar to airplane FFSs, and mirror the airplane FFSs' visual cues and aircraft feel, and replicate flight of an actual rotorcraft. Therefore, the FAA proposes to amend paragraphs (b)(2) and (3) to change the word "airplane" to "aircraft." Resultantly, changing the text to aircraft enables powered-lift and rotorcraft instructors to complete an observation program in addition to the inflight training option under paragraph (b)(1). This provides flexibility to select the best option for instructors, reducing environmental impact, congestion in the NAS, and granting all instructors the ability to participate in an approved line-observation program.

Finally, § 142.57 prescribes requirements for training center certificate holders and applicants that use aircraft for flight instruction. Paragraph (b) requires the training center certificate holder or applicant to ensure, in part, that aircraft used in flight instruction are two-place aircraft with engine power controls and flight controls easily reached from both pilot stations. Paragraph (c) provides an exception to this requirement, specifically permitting the training center to use an airplane where certain controls are not easily reached by both pilots if the certificate holder has determined that the flight instruction can be conducted in a safe manner.

As currently written, paragraph (c) only applies to training centers using airplanes. In the NPRM published on August 11, 1992, the FAA's accompanying explanation for this regulation illustrates that it did not intend to limit the relief afforded by this paragraph to only airplanes. In fact, the preamble stated, "certain uniquely configured aircraft can be safely operated with flight controls that do not meet the above standards, paragraph (c) of this proposed section would permit a training center to

authorize the use of such aircraft upon a finding that flight instruction can be safely conducted in them."[327] The FAA clearly intended for this paragraph to apply to all aircraft but that intent was not realized when the regulatory text used the word "airplane."

Two-place aircraft with engine power controls and flight controls that are not easily reached from both pilot stations are continually designed and manufactured; this is not unique to only airplanes. These aircraft are distinctly configured, and the certificate holder is in a position to determine whether they may be safely operated for the purposes of flight instruction considering the location of controls and operation for that specific aircraft. Therefore, the FAA continues to support the original intention that relief is warranted for all aircraft and proposes to change the word "airplane" in § 142.57(c) to "aircraft." This amendment would allow training centers to utilize an airplane, powered-lift, or rotorcraft with controls not easily reached and operated in a conventional manner by both pilots if the certificate holder determines the flight instruction can be conducted in a safe manner considering the location of controls and their nonconventional operation, or both.

3. Temporary Alternate Means to Satisfy Minimum Curriculum Content in Training Courses under Part 142

As discussed previously in section V.G.1 of this preamble, some powered-lift may not be capable of performing all the tasks listed in the appropriate ACS for that practical test for the certificate or rating sought. The FAA proposes that if it authorizes an examiner to waive a specific task during the practical test because the powered-lift is incapable of performing the task, the applicant should also be relieved from the requirement to receive flight training on that task. Therefore, in proposed § 194.251, the FAA proposes that a training course for which approval is requested is not required to

[327] Aircraft Flight Simulator Use in Pilot Training, Testing, and Checking and at Training Centers, 57 FR 35905 (Aug. 11, 1992).

consist of training on a task specified in an area of operation if the powered-lift is not capable of performing the task, provided the FAA has issued waiver authority for that task in accordance with § 194.207(b).

K. Subpart K of Part 91 Pilot Qualifications

Subpart K was added to part 91 in 2003 to establish criteria for fractional ownership programs.[328] It allows fractional owners and the management company to share operational control of the aircraft and delineates operational control responsibilities. It also contains regulatory safety standards for operations under fractional ownership programs, including pilot training. Subpart K currently has two powered-lift references in §§ 91.1001(b)(10) and 91.1053(a)(2). These references were included when subpart K of part 91 was codified to prescribe specific applicability and crew training requirements for fractional ownership operations.

Section 91.1053 prescribes the FAA certification and ratings required to serve as a pilot in a powered-lift as part of a fractional ownership program and is applicable to powered-lift as written. Section 91.1053(a)(2)(i) requires the PIC of a powered-lift to hold an ATP certificate and applicable type ratings to conduct operations under subpart k of part 91. The FAA proposes to permanently amend § 91.1053(a)(2)(i) to clarify that the type rating required cannot be limited to VFR only operations.

Under the VFR only type rating proposed in section V.H of this preamble, a pilot may take their instrument rating practical test within two calendar months after they pass the type rating practical test in a powered-lift. However, the FAA finds that the skills and experience required to pass an instrument rating practical test are necessary to ensure safety in subpart K operations. In part, the instrument rating requirements necessary to pass the associated practical test ensure that PICs of powered-lift possess proper training

[328] Regulation of Fractional Aircraft Ownership Programs and On-Demand Operations, 68 FR 54561 (Sep. 17, 2003).

and experience in simulated and actual instrument conditions. This is particularly important when considering the operating environment anticipated for powered-lift in subpart K operations, where pilot error can be immediately safety-critical when encountering IMC or areas of lower visibility. For these reasons, and those discussed more fully in support of restricting the use of a VFR only type rating in part 135 operations above, the FAA proposes a permanent amendment to § 91.1053(a)(2)(i) to clarify that the type rating required to operate under subpart k of part 91 cannot be limited to VFR only operations.

Section 91.1055 prescribes pilot operating limitations and pairing requirements for fixed-wing program aircraft. The regulation requires the PIC to execute takeoffs and landings under certain operational conditions when the SIC has less than 100 hours of flight time as SIC in the aircraft make and model and type, if a type rating is required, and the PIC is not an appropriately qualified check pilot. The FAA maintains that the familiarity required for SICs should be the same for powered-lift as required for fixed-wing aircraft. The crew pairing and operational limitations required by this section are designed to ensure the flightcrew possess the necessary familiarity and experience to safely operate the aircraft. Therefore, to ensure an appropriate level of safety for powered-lift, the FAA is proposing that this rule apply to powered-lift under the SFAR.

Lastly, § 91.1065 prescribes the initial and recurrent pilot testing requirements. To ensure an appropriate level of safety is maintained when these aircraft are operated, the FAA notes that § 91.1065(b) applies to each type of anticipated powered-lift because this section currently applies to the type of multiengine aircraft, turbojet airplane, or rotorcraft. As described in section VI.A of this preamble, all powered-lift coming to market are multiengine aircraft, and the FAA does not anticipate civil single-engine powered-lift to be developed during the term of this SFAR. As such, in accordance with existing § 91.1065(b), PICs and SICs of powered-lift fractional ownership program

operations must complete a competency check in each type of powered-lift in which the pilot will serve every 12 calendar months. Accordingly, the FAA is not proposing any amendments to § 91.1065(b).

L. Summary of Proposed Regulatory Changes for Airmen

Table 8 Summary of Proposed Temporary Provisions in SFAR

Topic	14 CFR § affected	Current Requirement	Proposed SFAR §	Summary of Proposed Alternate Requirement in SFAR
Cross-country time	61.1(b)	• To log cross-country time in a powered-lift, the flight must include at least a straight-line distance of more than 50 nautical miles	194.201	• Allows a person to log cross-country time in a powered-lift when the flight includes at least a straight-line distance of more than 25 nautical miles
Qualification requirements for part 135 flight instructors	61.3(d)(2) 61.3(d)(3)(ii) 61.167(a)(2) 61.195(b)(1)	• To instruct in a powered-lift under a part 135 approved training program, a person must hold either a flight instructor certificate or an ATP certificate with the appropriate powered-lift ratings	194.203(b) 194.205 194.243(a)(1)	• Requires a person to hold a flight instructor certificate with the appropriate powered-lift ratings to conduct training in accordance with a part 135 approved training curriculum that culminates in a commercial pilot certificate with a powered-lift category rating, an instrument-powered-lift rating, and an initial powered-lift type rating.[329]

[329] As discussed in section V.F of this preamble, this proposal would not alter the current part 135 training environment. A part 135 instructor would only be required to hold a flight instructor certificate with powered-lift ratings to conduct training in the part 135 operator's airmen certification curriculum proposed in § 194.243(a).

Practical tests in powered-lift that are incapable of performing certain tasks	61.45(b)	• An applicant for a certificate or rating may use an aircraft with operating characteristics that preclude the applicant from performing all the tasks required for the practical test, but the certificate or rating will be issued with an appropriate limitation	194.207(a) and (b)	• Allows an examiner who conducts a practical test in a powered-lift that is unable to perform all the tasks required for the practical test to waive any task for which the FAA has provided waiver authority and enables the issuance of powered-lift ratings without limitations
Flight training on tasks for which the FAA has provided waiver authority	61.107(a), (b)(5) 61.127(a), (e)	• An applicant for a private pilot certificate or a commercial pilot certificate with a powered-lift category rating must receive flight training on the areas of operation listed in § 61.107(b)(5) or § 61.127(e), as appropriate to the certificate sought	194.207(c); 194.251	• Relieves an applicant from the requirement to receive flight training on a task specified in an area of operation if the task cannot be performed in the powered-lift, as determined by the FAA's issuance of waiver authority for the task on a practical test
Additional qualification requirements for certain pilots serving as SIC	61.55	• A person serving as SIC of an aircraft type certificated for more than one required pilot flight crewmember	194.209	• Adds an SIC qualification requirement for persons who obtain a powered-lift category rating by passing a practical test during which the

		or in operations requiring an SIC pilot flight crewmember must meet the qualification requirements contained in § 61.55		examiner waived a required task. To serve as SIC of a powered-lift that is capable of performing the waived task, the person must receive training from an authorized instructor on the task and an endorsement certifying that the person has satisfactorily demonstrated proficiency of the task, subject to certain exceptions
Eligibility requirements for a person seeking a powered-lift type rating	61.63(d) and (e)	• An applicant seeking an aircraft type rating concurrently with an aircraft category rating must hold or concurrently obtain an appropriate instrument rating unless the aircraft is not capable of instrument maneuvers and procedures	194.211	• Relieves an applicant seeking a powered-lift type rating concurrently with a powered-lift category rating from the requirement to concurrently obtain an instrument-powered-lift rating, which would require three practical tests simultaneously. Instead, allows the applicant to complete the instrument rating practical test and the instrument portion of the type rating practical test later by issuing a "VFR only" limitation on the powered-lift type rating,

				which would remain valid for 2 calendar months[330]
Aeronautical experience and logging requirements for a commercial pilot certificate with a powered-lift category rating	61.129(e) 61.51(e)	• Section 61.129(e) contains the aeronautical experience requirements for a person seeking a powered-lift category rating on a commercial pilot certificate. Section 61.51(e) contains the requirements for logging PIC flight time.	194.215; 194.217 through 194.223; 194.233	• Establishes alternate experience and logging requirements that remove current regulatory burdens and facilitate commercial pilot certification in the powered-lift category for the following groups of pilots: (1) test pilots and instructor pilots, (2) initial cadre of instructors for an approved training program under part 135, 141, or 142, and (3) persons completing an approved training program under part 135, 141, or 142 • See Tables 2, 3, and 4 in section V.E of this preamble for additional information.
Aeronautical experience and logging requirements for an instrument-powered-lift rating	61.65(f) 61.51(e)	• Section 61.65(f) contains the aeronautical experience requirements for a person seeking an instrument-powered-lift rating. Section 61.51(e) contains the	194.215; 194.225 through 194.231; 194.235	• Establishes alternate experience and logging requirements that remove current regulatory burdens and facilitate the ability to obtain an instrument-powered-lift rating for the following groups of pilots:

[330] A person holding a private pilot certificate is not required to remove the "VFR Only" limitation if the limitation applies to a powered-lift type that is not a large aircraft or turbojet-powered.

		requirements for logging PIC flight time.		(1) test pilots and instructor pilots, (2) initial cadre of instructors for an approved training program under part 135, 141, or 142, and (3) persons completing an approved training program under part 135, 141, or 142 • See Tables 5, 6, and 7 in section V.E. of this preamble for additional information.
Cross-country aeronautical experience requirements for a private pilot certificate with a powered-lift category rating	61.109(e)(2)(i), (e)(5)(ii)	• Requires an applicant for a private pilot certificate with a powered-lift category rating to complete (1) a cross-country flight of over 100 nautical miles total distance, and (2) a solo cross-country flight of 150 nautical miles total distance with one segment of the flight consisting of a straight-line distance of more than 50 nautical miles	194.237	• Establish alternate cross country experience requirements that allow an applicant for a private pilot certificate with a powered-lift category rating to complete certain cross-country flights with reduced nautical mile distances
PIC and SIC operating limitations and pairing requirement	91.1055(a)	• Requires SIC of a fixed-wing program aircraft with	194.245(a)	• Applies fixed-wing program aircraft pairing requirement to

in part 91, subpart K, operations		fewer than 100 hours of flight time as SIC flying in the aircraft make and model and, if a type rating is required, in the type aircraft being flown, to have the PIC, if not an appropriately qualified check pilot, make all takeoffs and landings in the situations listed in paragraphs (a)(1) and (2)		SICs operating powered-lift
Commuter operations with airplanes requiring two pilots by type certification	135.3(b)	• Requires certificate holders that conduct commuter operations under part 135 with airplanes in which two pilots are required by type certification rules of chapter I to comply with subparts N and O of part 121, instead of subparts E, G, and H of part 135	194.247(b)	• Adds a requirement for certificate holders conducting commuter operations under part 135 with powered-lift requiring two pilots by the aircraft flight manual to comply with subpart Y of part 121, the Advanced Qualification Program (AQP). PICs would also be required to receive other instruction, facilitated discussion, and training, including scenario-based training, as part of their initial, recurrent, and

				upgrade ground training
PIC operating experience requirements in commuter operations	135.244(a)(1) through (4)	• Requires PIC in commuter operations to complete the applicable operating experience listed in paragraphs (a)(1) through (4) in the make and basic model of aircraft to be flown	194.247(c)	• Makes operating experience requirements in paragraphs (a)(1) through (4) inapplicable to powered-lift PICs and establishes 20-hour PIC operating experience requirement in each make and basic model of powered-lift to be flown
Initial, transition, and upgrade ground training for pilots	135.345(b)(6)(iv)	• Requires initial, transition, and upgrade ground training for pilots for each aircraft type to include knowledge and procedures for operating airplanes during ground icing conditions, including the areas listed in paragraphs (b)(6)(iv)(A) through (G), if the certificate holder expects to authorize takeoffs in ground icing conditions	194.247(d)	• Establishes that initial, transition, and upgrade ground training under § 135.345 for powered-lift pilots must include instruction in § 135.345(b)(6)(iv), as applicable
Pilot certification through completion of training, testing,	N/A	• No current requirement	194.243	• Allows part 119 certificate holders authorized to

and checking under part 135				conduct part 135 operations to establish and implement certain training curriculums to satisfy training and experience requirements by facilitating alternate eligibility standards for pilots who may be trained under such curricula and using competency checks and proficiency checks required by part 135 to satisfy practical test requirements
Qualification requirements for chief instructors, assistant chief instructors, and check instructors	141.35(a)(1) 141.36(a)(1) 141.37(a)(2)(ii)	• Requires a chief instructor, assistant chief instructor, and a check instructor (for checks and tests that relate to a flight training course) to hold (1) a commercial pilot certificate or ATP certificate with the appropriate aircraft category and class ratings, and (2) a flight instructor certificate with the	194.241(a)	• Relieves persons seeking designation as a chief instructor, assistant chief instructor, or check instructor (for checks and tests that relate to flight training) in a course of training for a powered-lift from the requirement to hold a class rating on the pilot certificate and flight instructor certificate

		appropriate category and class ratings		
Qualification requirements for check instructors for checks and tests that relate to ground training	141.37(a)(3)(ii)	• Requires a check instructor (for checks and tests that relate to ground training) to hold ground instructor certificate or a flight instructor certificate with the appropriate category and class ratings	194.241(b)	• Relieves persons seeking designation as a check instructor (for checks and tests that relate to ground training) in a course of training for a powered-lift from the requirement to hold a class rating on the flight instructor certificate

Table 9: Summary of Proposed Permanent Changes

Provision	14 CFR § affected	Summary of Proposed Provision
Certificates and ratings issued under part 61	61.5(b)(7)	• Adds powered-lift to the list of aircraft type ratings that may be placed on a pilot certificate when an applicant satisfactorily accomplishes the training and certification requirements for the rating sought. • Relocates the SIC pilot type rating from the list of aircraft type ratings to an independent provision.
Type rating requirements	61.31(a)	• Adds powered-lift to the list of aircraft for which a PIC must hold a type rating.
SIC qualifications	61.55(a)	• Adds a provision to cross-reference the proposed SIC qualification requirements in the SFAR that would apply only to persons seeking to serve as SIC of a powered-lift that is capable of performing tasks that the person was never trained or tested on.
Additional aircraft ratings	61.63(h) 61.165(g)	• Removes provisions that enable a pilot to apply for a category and class rating that is limited to a specific make and model of experimental aircraft based on flight time that was logged between September 1, 2004, and August 31, 2005. Because persons have had over 15 years to obtain a limited rating under these provisions, FAA anticipates that these provisions are obsolete.
Clarification of Requirements	61.39(a)(iii); 61.43(g); 61.47(d)	• Adds a provision to make clear that a person may not furnish an aircraft that requires a type rating (or a FSTD representing

for a Practical Test in an Aircraft Requiring a Type Rating		an aircraft requiring a type rating) for the practical test without seeking a type rating for that aircraft.
Use of an FFS or FTD	61.64(e), (f)	• Requires a person completing the entire practical test in a Level C or higher FFS to obtain a powered-lift type rating with a PIC limitation unless the person has 500 hours of flight time in the type of powered-lift.
Private Pilot Aeronautical experience: Powered-lift category rating	61.109(e)(5)	• Requires a person seeking a powered-lift category rating on a private pilot certificate to obtain 10 hours of solo flight time in a powered-lift.
ATP Aeronautical experience: Powered-lift category rating	61.163(c)	• Permits flight time logged under SIC PDP to be credited towards 1,500 hours of total time required for an ATP certificate with a powered-lift category rating.
ATP privileges and limitations	61.167(a)(2)	• Adds reference to the ATP experience requirements of § 61.163 to enable a person who holds an ATP certificate with a powered-lift category rating to have instructional privileges consistent with those afforded to ATP certificate holders with airplane and helicopter ratings.
Crewmember experience and minimum equipment list requirements for program aircraft	91.1053(a)(2)(i) 91.1115(b)(1)	• Requires that type rating for PIC operating powered-lift in program operations under subpart K of part 91 not be limited to VFR only • Adds powered-lift and other aircraft to regulation prescribing instruments and equipment that may not be included in the Minimum Equipment List
PIC qualifications for certain part 135 passenger-carrying operations	135.243(a)	• Adds requirement to hold an ATP certificate with a powered-lift category rating and an appropriate type rating not limited to VFR for that powered-lift, when serving as PIC in: (1) on-demand passenger-carrying turbojet-powered powered-lift operations; (2) on-demand operations in a powered-lift having a passenger seating configuration, excluding crewmember seats, of ten or more; and (3) powered-lift commuter operations other than turbojet-powered powered-lift
PIC qualifications to conduct VFR and IFR operations under part 135	135.243(b) and (c)	• Requires the PIC of a part 135 VFR operation in a powered-lift to hold a commercial pilot certificate with appropriate category ratings, an appropriate type rating not limited to VFR, and an instrument-powered-lift rating or an ATP certificate with a powered-lift category rating • Requires the PIC of a part 135 IFR operation in a powered-lift to hold a commercial pilot certificate with appropriate category ratings, a type rating for the aircraft not limited to VFR, and an

		instrument-powered-lift rating or an ATP certificate with a powered-lift category rating
SIC qualifications under part 135	135.245(c)	• Adds requirements for maintaining instrument experience for powered-lift SICs that operate under IFR
Initial and recurrent pilot testing requirements in part 135 operations	135.293(a)(9), (b), and (c)	• Adds testing requirement for powered-lift pilots on specific procedures to recognize and avoid hazardous visibility conditions • Adds competency check requirement to be conducted in the type of powered-lift in which the pilot will serve • Requires competency check in a powered-lift to include a demonstration of the pilot's ability to maneuver the powered-lift solely by reference to instruments; safely maneuver the powered-lift into VMC following an inadvertent encounter with IMC; and, for non-IFR-certificated powered-lift, requires performance of maneuvers appropriate to the powered-lift's installed equipment, the certificate holder's operations specifications, and the operating environment
PIC instrument proficiency check requirements under part 135	135.297(c)(1), (g)(3)	• Modifies instrument proficiency check requirements to align powered-lift, rotorcraft, and airplane PIC IPC requirements • Modifies PIC IPC requirements when using autopilot instead of an SIC in powered-lift and rotorcraft, to align with IPC requirements when using autopilot instead of an SIC in an airplane
Training center certificate holder training specifications	142.11(d)(2)(iii)	• Adds training specification requirements for powered-lift flight simulators and flight training devices
Training center instructor eligibility requirements	142.47(a)(5)(ii) and (c)(2)(ii)	• Adds requirement that instructors providing instruction in flight simulators or flight training devices that represent aircraft requiring a type rating, or in a curriculum leading to an ATP certificate or adding a rating to an ATP certificate, meet the aeronautical experience requirements of § 61.159, § 61.161, or § 61.163 • Clarifies scope of knowledge tests that instructors must satisfactorily complete
Training center instructor training and testing requirements	142.53(b)(2)(i) and (b)(3)(i)	• Adds allowance for instructors instructing in a flight simulator for an ATP certificate or type rating to meet one of three requirements
Flight instruction aircraft requirements	142.57(c)	• Adds exception for training centers to use aircraft with controls not easily reached from both pilot stations if the certificate holder determines the flight instruction can be conducted in a safe manner

for training centers		

VI. **Operational Rules for Powered-Lift**

A. Introduction

The following sections detail the operational rules that the FAA proposes to apply to powered-lift under the SFAR. Through the proposed SFAR, the FAA would provide a pathway to integrate powered-lift operations into parts 91, 97, 135, and 136. The FAA proposes to apply specific airplane, rotorcraft, and helicopter rules to powered-lift as appropriate.[331]

Currently, parts 43, 91, 97, 135, and 136 contain certain provisions applicable to aircraft, generally, and do not specify applicability to a particular kind of aircraft (e.g., airplane, rotorcraft, or powered-lift). Accordingly, these provisions are already applicable to powered-lift because powered-lift meet the definition of aircraft in § 1.1. In order to mitigate the safety gaps that exist due to the absence of operational regulations specifically applicable to powered-lift, the FAA proposes, through the SFAR, to apply specific airplane, rotorcraft, and helicopter rules contained in parts 43, 91, 97, 135, and 136 to powered-lift as appropriate. The FAA conducted a comprehensive review of the operational rules, taking into consideration the anticipated capabilities of powered-lift and the lack of operational data. Each rule was evaluated to determine whether the airplane or the rotorcraft/helicopter provisions would maintain a level of safety for powered-lift operations as is provided in the current rules. Based on this review, the FAA asserts that the proposed provisions will maintain an equivalent level of safety for

[331] The FAA notes that there are some inconsistencies in how FAA regulations currently refer to "rotorcraft" versus "helicopter." In this preamble, the FAA references the term that is currently used in each regulation. In the future, the FAA may propose standardizing the use of "rotorcraft" or "helicopter."

operations conducted in powered-lift to those conducted in airplanes, rotorcraft, or helicopters.

In conducting its analysis, the FAA noted the hybrid nature of the performance characteristics for powered-lift and reviewed the rules that explicitly state airplane, rotorcraft, and helicopter. Powered-lift have the ability to takeoff and land vertically like helicopters, but also fly similar to an airplane. The FAA anticipates some powered-lift may also be capable of conducting takeoff and landing operations that depend on wing-borne lift, similar to an airplane. The FAA also anticipates powered-lift operators will maximize the aircraft's unique characteristics to conduct a range of different operations. These operations will likely include low speed, short distance, and short duration flights typically flown in helicopters; as well as longer, faster, and higher altitude flights typically flown by airplanes. The FAA reasons that while powered-lift have a range of performance characteristics, the majority of the powered-lift flight time will be during cruise operations. Moreover, when operating similar to a helicopter, powered-lift may have substantial differences in performance, transition times, and methods; and vary in their ability to sustain hover, land at a heliport, or execute copter approaches. The FAA acknowledges that the capability of every powered-lift may not be captured or accommodated by the SFAR. However, the SFAR is a temporary regulatory structure that allows the FAA time to draft permanent rules. Ultimately, the FAA proposes rules it considers appropriate for powered-lift based on risk and available data. The FAA seeks comment on this approach for operational rules as temporarily applied to powered-lift.

1. Aircraft References and Other Definitions in Section 1.1

As discussed previously, the regulations under title 14 of the Code of Federal Regulations that reference "aircraft" currently apply to powered-lift. As a result, the FAA generally does not address regulations pertaining to aircraft within the operational section of this preamble. The FAA analyzed regulations that reference airplane, rotorcraft,

aircraft with propellers or rotors, helicopter, powerplant, and engine to determine which of those regulations should apply to powered-lift, in addition to the requirements already applicable to "aircraft."

To enable powered-lift to conduct extended overwater operations and to use heliports in those operations, the FAA proposes to apply the "extended over-water operation" and "heliport" definitions in § 1.1 to powered-lift. "Extended over-water operation" for helicopters is defined as "an operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline and more than 50 nautical miles from an off-shore heliport structure." Section 1.1 defines "heliport" as "an area of land, water, or structure used or intended to be used for the landing and takeoff of helicopters." The FAA recognizes that it has published interim guidance for vertiport design, and industry is seeking use of existing infrastructure, including heliports. The FAA is evaluating whether these structures could be used with modification. The FAA proposes to enable operations using heliports and solicits comments from industry on the viability of this proposal. The FAA discusses this proposal in more detail in sections VI.B and VI.D of this preamble.

2. Powerplant and Engine References

Within the operational rules of this SFAR, the FAA generally does not impose requirements based on the powerplant of the powered-lift. For example, where a regulation refers to an aircraft powered by turbines, the FAA takes the approach that such regulations should apply to all powered-lift. The FAA anticipates that certain powerplants, such as electric motors, may have equal or better performance in comparison to internal combustion engines, which could lead to higher performance capabilities, so in an abundance of caution, the FAA is generally taking a more conservative approach and requiring that certain operating regulations apply to all powered-lift, regardless of powerplant. There are, however, some regulations where the

FAA proposes to apply certain regulations based on powerplant because those regulations contain factors other than performance which trigger the applicability of that particular regulation (e.g., the regulation is powerplant specific to maintain the intent for noise abatement in certain classes of airspace). In those instances, the FAA explains why it proposes to retain the powerplant reference.

Notably, as stated in section V.J of this preamble, at present, the FAA does not anticipate the introduction of turbojet-powered powered-lift into the civilian market. The FAA recognizes that in the Update to Air Carrier Definitions NPRM, the FAA proposes amendments to definitions to distinguish between powered-lift that are turbojet-powered and those that are not for purposes of forecasting an operational framework based on aircraft performance. The FAA also references turbojet-powered powered-lift for purposes of proposing an airman certification framework for pilots of those aircraft; however, due to the lack of turbojet-powered powered-lift expected to enter the civilian market during the term of this SFAR, it is appropriate for the operating regulations to generally remain powerplant neutral at this time.

This proposed rule refers to powered-lift electric motors as "engines." The FAA has previously determined that it is appropriate to use the term "engine" for powered-lift electric motors to remain consistent with regulatory references to "engines" and to ensure the appropriate regulations apply to powered-lift.[332] In addition, the FAA does not impose requirements specifically for "multiengine" powered-lift, even though many regulations within parts 91, 135, and 136 reference "multiengine" airplanes and aircraft.[333] The FAA acknowledges that currently all civil powered-lift coming to market are multiengine aircraft, and it does not anticipate civil single-engine powered-lift to be developed during

---

[332] The FAA issued the first special conditions for an electric engine in September 2021. See Special Conditions: magiX USA, Inc., magni350 and magni650 Model Engines; Electric Engine Airworthiness Standards, 86 FR 53508 (Sep. 27, 2021).

[333] See, e.g., §§ 91.501 (applying the operational requirements of subpart F to turbine-powered multiengine airplanes) and 135.152 (requiring FDRs on certain multiengine, turbine-engine powered airplanes).

the term of this SFAR. Accordingly, to reduce redundancy and to ensure the regulations apply as intended, the FAA applies multiengine regulations to all powered-lift.

3. Flight Modes

The operational rules of this SFAR refer to two flight modes: wing-borne flight mode and vertical-lift flight mode. Wing-borne flight mode refers to powered-lift that are operating more like traditional airplanes, which use a wing to generate lift and depend exclusively or partially on nonrotating airfoil(s) for lift during takeoff, landing, or horizontal flight. Vertical-lift flight mode refers to powered-lift that are operating like traditional rotorcraft, which are capable of vertical takeoff, vertical landing, and low speed flight; and depend principally on engine-driven lift devices or engine thrust for lift.

4. Incorporation by Reference

Incorporation by reference (IBR) is a mechanism that allows Federal agencies to comply with the requirements of the Administrative Procedure Act to publish rules in the *Federal Register* and the CFR by referring to material published elsewhere.[334] Material that is incorporated by reference has the same legal status as if it were published in full in the *Federal Register*. The standards referenced in this rule include technical information and specifications for equipment and capabilities required to meet terrain awareness and warning systems and helicopter terrain awareness and warning systems.

The standards referenced in §§ 194.109, 194.302, 194.307, and 194.308 of this proposed rule are proposed to be incorporated by reference with the approval of the Director of the Office of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51.

1. TSO-C194, Helicopter Terrain Awareness and Warning System (Dec. 17, 2008). This TSO contains the minimum performance standards the helicopter terrain awareness and warning system must meet for approval and identification with the TSO

[334] *See* 5 U.S.C. 552(a) and 1 CFR part 51.

marking. It may be obtained from the U.S. Department of Transportation, Subsequent Distribution Office, DOT Warehouse M30, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785; telephone (301) 322-5377. It is also available on the FAA's website at www.faa.gov/aircraft/air_cert/design_approvals/tso/. Select the link "Search Technical Standard Orders."

2. Section 2, Equipment Performance Requirements and Test Procedures, of RTCA DO-309, Minimum Operational Performance Standards (MOPS) for Helicopter Terrain Awareness and Warning System (HTAWS) Airborne Equipment (Mar. 13, 2008). Section 2 of RTCA DO-309 contains the equipment performance requirements and test procedures for Helicopter Terrain Awareness and Warning Systems. It may be obtained from RTCA, Inc., 1150 18th St NW Suite 910, Washington, DC 20036; telephone (202) 833-9339; website: www.rtca.org/products.

In accordance with 5 U.S.C. 552(a) and 1 CFR part 51,[335] all approved materials are available for inspection at the FAA's Office of Rulemaking, 800 Independence Avenue, SW, Washington, DC 20590 (telephone (202) 267-9677).

B. Part 91 Rules for Powered-Lift

Part 91 prescribes flight rules governing the operation of aircraft within the U.S., including the waters within 3 nautical miles of the U.S. coast.[336] Part 91 establishes broad requirements for aircraft operators, aircraft equipment, and aircraft maintenance, and specifically references powered-lift in subpart K. The references to powered-lift were

[335] 5 U.S.C. 552(a) requires that matter incorporated by reference be "reasonably available" as a condition of its eligibility. Further, 1 CFR 51.5(a)(1) requires that agencies seeking to incorporate material by reference discuss in the preamble of the proposed rule the ways that the material it is incorporating by reference is reasonably available to interested parties and how interested parties can obtain the material.
[336] The FAA notes that in addition to part 91 regulating the operation of aircraft within 3 nautical miles of the U.S. coast, certain part 91 regulations apply to persons operating aircraft over waters between 3 and 12 nautical miles from the U.S. coast. *See* 14 CFR. 91.1(b).

added to part 91 in 2003 as part of the fractional ownership amendments.[337] At the time of the fractional ownership amendments to part 91, the FAA did not consider it necessary to address powered-lift throughout part 91 because powered-lift were not available for civil operations. As a result, powered-lift were not included as a type of aircraft in part 91, and the part 91 operational rules that are based on category or class of aircraft do not apply to powered-lift.

The FAA limits the scope of this SFAR to include only the relevant operational rules in 14 CFR part 91, subparts A through H[338] and K. Applying the specific airplane or helicopter rules from these subparts will provide an appropriate level of safety for powered-lift operations. Regulations from subparts I, J, L, M, and N[339] are not addressed in this SFAR because they apply to aircraft generally, and thus already apply to powered-lift, or because they apply to a distinct class of aircraft to which powered-lift do not belong.

The discussion that follows explains the proposed application of specific part 91 regulations to powered-lift, as reflected by the tables contained in proposed §§194.302 and 194.303. These provisions are organized by subpart in the rule. As an additional note, § 91.905 has a list of specific regulations that are subject to waiver, as described in § 91.903. Powered-lift operators may also apply for waivers from those provisions if they cannot comply with the requirements subject to waiver, including those modified by the SFAR, or, if the provision is not subject to waiver, the operator may seek an exemption.

---

[337] Regulation of Fractional Aircraft Ownership Programs and On-Demand Operations; Final Rule, 68 FR 54520 (Sep. 17, 2003).

[338] Subparts A through H address general operating rules flight rules; equipment instrument and certificate requirements; special flight operations, maintenance, preventive maintenance and alteration, large and turbine-powered multiengine airplanes and fractional ownership program aircraft; and additional equipment and operating requirements for large and transport category aircraft, respectively.

[339] See subpart I, Operating Noise Limits; subpart J, Waivers; subpart L, Continued Airworthiness and Safety Improvements; subpart M, Special Federal Aviation Regulations; and subpart N, Mitsubishi MU-2B Series Special Training, Experience, and Operating Requirements.

1. Subpart A - General Requirements

Subpart A prescribes rules governing the operation of aircraft within the U.S., including the waters within 3 nautical miles of the U.S. coast.[340] The provisions are applicable to all aircraft operating in the NAS, unless specifically excepted, such as for aircraft governed by part 103 or 107.

The proposed SFAR addresses only one section of subpart A, § 91.9. Paragraphs (a) and (b) of § 91.9 specify the requirements for complying with the operating limitations in an approved Airplane or Rotorcraft Flight Manual, and requirements for maintaining the Airplane or Rotorcraft Flight Manual in the aircraft, as appropriate to the aircraft. The FAA proposes in § 194.302(a) to apply the requirement to comply with the operating limitations of the aircraft's approved flight manual to powered-lift and to maintain the flight manual in the powered-lift. The FAA expects such aircraft to have an Aircraft Flight Manual approved through the airworthiness certification process, just as with airplane and rotorcraft certification and intends for powered-lift operators to comply with the manual requirements in this section, as is the case for airplanes and rotorcraft. The FAA also proposes a permanent amendment to § 91.1(d) to change the term "airplane" to "aircraft" because these provisions apply to all aircraft.

2. Subpart B - Flight Rules

Subpart B prescribes the flight rules governing the operation of aircraft within the U.S. and within 12 nautical miles from the coast of the U.S. This subpart primarily imposes requirements on all "aircraft," which, as mentioned previously, already apply to powered-lift.

i. General

[340] As previously mentioned, in addition to part 91 regulating the operation of aircraft within 3 nautical miles of the U.S. coast, certain part 91 regulations apply to persons operating aircraft over waters between 3 and 12 nautical miles from the U.S. coast. *See* 14 CFR. 91.1(b).

Section 91.103 – Preflight action – contains the requirement for a PIC to be familiar with all available information concerning that flight. This information must include takeoff and landing distance data as specified in an approved Airplane or Rotorcraft Flight Manual. The FAA proposes that powered-lift with an Aircraft Flight Manual approved through the aircraft certification process in part 21 comply with the provisions in § 91.103. The FAA has determined that the requirement to be familiar with the takeoff and landing distance data in the manual, as set forth in paragraph (b), would also be applicable to powered-lift, as reflected in proposed §194.302(b). Powered-lift are expected to takeoff and land similar to either an airplane or rotorcraft, depending on flight mode, and the distances referenced in this section would also be relevant for powered-lift operators to familiarizes themselves with.

Section 91.107 describes the use of safety belts, shoulder harnesses, and child restraint systems. Specifically, it requires that each person onboard an aircraft operated under part 91 occupy an approved seat or berth with a separate safety belt and, if installed, shoulder harness properly secured about the person during movement on the surface, takeoff, and landing. For seaplane and float-equipped rotorcraft operations during movement on the surface, this section excepts the person pushing off the seaplane or rotorcraft from a dock and the person mooring the seaplane or rotorcraft at a dock from the preceding seating and safety belt requirements.

In 1992, the FAA published a final rule[341] revising § 91.107 and acknowledged that it would be impossible to moor or launch a seaplane or a float-equipped rotorcraft unless a pilot or passenger has their safety belt or shoulder harness unfastened so that they can vacate their seat for the purpose of launching or mooring the seaplane or float equipped rotorcraft. The FAA proposes in § 194.302(c) to apply the same exception to powered-lift when the powered-lift is operating like a seaplane or float- equipped

[341] Miscellaneous Operational Amendments, 57 FR 42671 (Sep. 15, 1992).

rotorcraft. A pilot or passenger would also have to push a powered-lift conducting operations similar to a seaplane or float-equipped rotorcraft off a dock or moor a powered-lift to a dock. Accordingly, the exception contained in § 91.107(a)(3) would be appropriate to apply in such situations so that those individuals can push-off or moor an aircraft without violating the requirement to remain harnessed.

Section 91.113 prescribes the rule for converging aircraft based on category and type of operation (e.g., towing). Under § 91.113(d), when aircraft of the same category are converging at approximately the same altitude (except head-on, or nearly so), the aircraft to the other's right has the right-of-way. When the aircraft are of different categories, § 91.113(d)(1) through (3) establishes a hierarchy giving priority to balloons, then gliders, followed by airships, and then to airplanes and rotorcraft. An aircraft that is towing or refueling other aircraft has right-of-way over all other engine-driven aircraft. The FAA emphasized aircraft maneuverability when establishing the right-of-way hierarchy for converging aircraft in § 91.113(d)(1) through (3). The preamble for the original right-of-way rule states "an aircraft will give way to another of a different class which is less maneuverable and is unable to take as effective action to avoid collision."[342]

The FAA proposes in § 194.302(d) that powered-lift comply with the airplane provisions in this paragraph and yield right-of-way as prescribed in this section. For example, if a powered-lift is converging with an airplane, the aircraft to the right would have the right of way. The FAA proposes powered-lift, airplanes, and rotorcraft should be grouped in the same right-of-way category. The proposed approach is consistent with the FAA's historical prioritization of maneuverability for right-of-way considerations, and with the original purpose of the rule, which was to require more maneuverable aircraft give way to less maneuverable aircraft.

---

[342] See 12 FR 5547 at 5548 (Aug. 16, 1947), Civil Aeronautics Board Air Traffic Rule, note to § 60.104, later codified at 14 CFR 91.113.

Section 91.119 prescribes the minimum safe altitude (MSA) for aircraft operations. This section establishes less restrictive minima for helicopters, with helicopters being allowed to operate below the minimum altitudes prescribed in § 91.119(b) and (c) in certain circumstances. The justification for allowing helicopters to operate below minimum altitudes was based on helicopter performance capability. In the preamble[343] to the original MSA rule, the FAA stated that the rule recognizes the helicopter special flight characteristics which can accomplish an emergency landing within a relatively small space. However, if a helicopter is flown over a congested area at less than 1,000 feet above the highest obstacle, the pilot is required to fly with due regard to places where an emergency landing can be made safely and to maintain an altitude along the flight path from which such an emergency landing can be affected at any time.

Helicopter maneuverability and autorotation capability after an engine failure were key factors in the FAA's decision to allow helicopter operations below MSA. Likewise, the FAA considered, for purposes of this proposal, whether powered-lift with helicopter characteristics should also be allowed to conduct operations below MSA.

Some powered-lift may not have autorotation capability, while other powered-lift may lose significant altitude while transitioning the aircraft rotors to a vertical position suitable for autorotation. The transition of a powered-lift from forward flight to vertical flight would not be instantaneous, requiring additional time, distance, and altitude that is unique from helicopters. Although some powered-lift may be capable of performing an emergency autorotation into a more confined space, the FAA anticipates that additional altitude would increase the chances of a successful outcome without undue hazard to persons or property on the surface. Accordingly, the FAA is not proposing to apply the helicopter minimum altitude requirements of § 91.119 to powered-lift. The FAA

[343] Id.

anticipates learning more about powered-lift operational capabilities and commonalities during the term of the proposed SFAR.

Section 91.126(b) describes directions of turns when approaching to land at an airport without an operating control tower in Class G airspace. The FAA anticipates that some powered-lift will transition much like a helicopter, from forward flight (wing-borne flight mode) to vertical flight (vertical-lift flight mode) upon entering the traffic pattern to land.[344] The FAA proposes in § 194.302(e) to apply the airplane provisions detailed in § 91.126(b)(1) when the operator of the powered-lift intends to land in wing-borne flight mode, which is how an airplane lands. The FAA proposes in § 194.303(b) to apply the helicopter provisions detailed in § 91.126(b)(2) to powered-lift when the powered-lift intends to land in vertical-flight mode. This proposal would provide the flexibility for powered-lift operators capable of landing in vertical-flight mode to approach to land at most helicopter pads while avoiding the flow of fixed-wing aircraft. This application of the rule gives flexibility to the novel capabilities of powered-lift while maintaining an appropriate level of operational safety by using the standard traffic pattern flow at airports without operating control towers.

Section 91.126(c) outlines the final flap settings required for turbojet-powered airplanes as outlined in the Airplane Flight Manual. Specifically, it requires the PIC of a civil turbojet-powered aircraft to use, as a final flap setting, the minimum certificated landing flap setting set forth in the approved performance information in the Airplane Flight Manual for the applicable conditions. Paragraph (c) uses the term turbojet-powered aircraft; however, the history of this rule indicates it was intended for turbojet-powered airplanes only. [345] Furthermore, the FAA is not aware of any turbojet-powered powered-

---

[344] When approaching to land at an airport without an operating control tower in Class G airspace. 14 CFR 91.126(b).

[345] In a 1989 proposed rulemaking updating airspace classifications, the FAA inadvertently included reference to "aircraft" in the first sentence of paragraph (c) (then, § 91.85(b)), but the remainder of the paragraph refers to "airplane". See Airspace Reclassification, NPRM, 54 FR 42916, 42929 (Oct. 18, 1989).

lift currently in the certification process, nor are any anticipated during the term of this SFAR. The FAA understands that some powered-lift utilize automatic flap settings. Requiring a powered-lift to transition out of its automatic settings creates opportunities for error which could inhibit a safe landing. To ensure that powered-lift can land safely at airports in Class G airspace, the FAA does not propose to apply this paragraph to powered-lift.

Section 91.129 provides requirements for operations in Class D airspace. The provisions of § 91.129(a) through (d), (g)(1), and (i) refer to aircraft, and accordingly are already applicable to powered-lift. However, paragraphs (e)(1) and (2) require minimum altitudes when operating to an airport in Class D airspace in large or turbine-powered airplanes. Under the existing rule of paragraph (e)(1), unless required by the applicable distance-from-cloud criteria, each pilot operating a large or turbine-powered airplane must enter the traffic pattern at an altitude of at least 1,500 feet above the elevation of the airport and maintain at least 1,500 feet until further descent is required for a safe landing. For paragraph (e)(2), a pilot operating a large or turbine-powered airplane approaching to land on a runway served by an instrument approach procedure with vertical guidance, if the airplane is so equipped, must operate that airplane at an altitude at or above the glide path between the published final approach fix and the decision altitude (DA), or decision height (DH), as applicable; or if compliance with the applicable distance-from-cloud criteria requires glide path interception closer in, operate that airplane at or above the glide path, between the point of interception of glide path and the DA or the DH. The FAA promulgated these particular requirements to address noise abatement concerns related to large and turbine-powered airplanes.[346] In order to remain consistent with this established agency policy for powered-lift operations that are likely to result in similar

[346] Noise Abatement Rules, 32 FR 15422 (Nov. 4, 1967), Noise Abatement Rules, 32 FR 5559 (Apr. 5, 1967).

noise due to size and powerplant, the FAA proposes in §194.302(f) that large[347] or turbine-powered powered-lift comply with paragraphs (e)(1) and (2). The FAA anticipates that for large and turbine-powered powered-lift, compliance with these requirements will be necessary for adequate noise abatement within Class D airspace.

For paragraph (e)(3), a pilot operating an airplane approaching to land on a runway served by a visual approach slope indicator (VASI) must operate that airplane at an altitude at or above the glide path until a lower altitude is necessary for a safe landing. The requirement for all airplanes to remain at or above the glide path provides an additional measure of safety such as obstacle clearance to airplanes during their approach. The FAA proposes in § 194.302(g) that powered-lift intending to land in wing-borne flight mode comply with this provision of paragraph (e)(3) to ensure adequate obstacle clearance is maintained during the approach. For those powered-lift intending to land in the vertical mode, the FAA anticipates they will be flying more slowly than when in wing-borne flight mode and able to maneuver similar to a helicopter and accordingly, compliance with this provision would not be required.

Section 91.129(f) imposes requirements for approaches except when conducting circling approaches under part 97 for airplanes and helicopters. The FAA anticipates that powered-lift will often transition from forward flight (wing-borne flight mode) to vertical flight (vertical-lift flight mode) upon entering the traffic pattern to land much like a traditional helicopter. The FAA proposes in § 194.302(h) that powered-lift comply with the airplane rule in § 91.129(f)(1) when the powered-lift is intending to land in wing-borne flight mode. When the operator of the powered-lift intends to land in vertical-flight mode, the powered-lift shall comply with the helicopter provisions detailed in § 91.129(f)(2). This application of the rule gives flexibility to the novel capabilities of

[347] Large aircraft are defined in § 1.1 as weighing more than 12,500 pounds, maximum certificated takeoff weight.

powered-lift while maintaining operational safety by using the standard traffic pattern flow at airports. The requirements of § 91.129(f)(1) and (2) do not apply to powered-lift conducting a circling approach under part 97 because a circling approach may have specific procedures established or turns may be requested by ATC to ensure safety in the traffic pattern.

Section 91.129(g)(2) requires that, unless otherwise required by the prescribed departure procedure for that airport or the applicable distance from clouds criteria, each pilot of a turbine-powered airplane and each pilot of a large airplane must climb to an altitude of 1,500 feet above the surface as rapidly as practicable. The FAA proposes in § 194.302(f) that large or turbine-powered powered-lift also comply with this requirement, to ensure that powered-lift will be operated at an equivalent level of safety to existing large or turbine-powered airplanes. This requirement will also provide adequate terrain clearance and improved noise abatement for these powered-lift and is consistent with previous rulemakings that established the 1,500 feet altitude requirement for noise abatement purposes.[348]

For runway usage requirements, the FAA proposes in § 194.302(f) that large or turbine-powered powered-lift comply with § 91.129(h), which states that where a formal runway use program has been established by the FAA, each pilot of a large or turbine-powered airplane assigned a noise abatement runway by ATC must use that runway. However, consistent with the final authority of the PIC concerning the safe operation of the aircraft as prescribed in § 91.3(a), ATC may assign a different runway if requested by the pilot in the interest of safety. This requirement is consistent with previously established FAA policy regarding noise abatement and operational safety,[349] and the FAA

[348] Noise Abatement Rules, 32 FR 15417, 15422 (Nov. 4, 1967).
[349] Airspace Reclassification, 54 FR 42916 (Oct. 18, 1989).

considers this requirement to be appropriate for powered-lift operations to ensure adequate noise abatement.

Section 91.131 contains rules governing operations in Class B airspace. Paragraph (a)(2) of this section requires that each person operating a large turbine-engine powered airplane to or from a primary airport for which Class B airspace area is designated must operate at or above the designated floor of the Class B airspace while within the lateral limits of that area.

The FAA proposes in §194.302(i) that § 91.131(a)(2) apply to large powered-lift regardless of powerplant type. When operating to or from a primary airport within Class B airspace, the FAA expects the performance characteristics of a large powered-lift to be similar to a large turbine-engine powered airplane. Compliance with § 91.131(a)(2) will ensure the safe and efficient flow of air traffic within this high-traffic airspace and ensure that large powered-lift remain deconflicted from smaller aircraft that may be operating under the Class B airspace and not receiving air traffic services. Finally, the proposed approach is the most conservative application of this rule and is consistent with FAA initiatives to effectively manage and segregate high-performance aircraft from other air traffic.[350]

ii. Visual Flight Rules

Section 91.151 prescribes fuel requirements for flight in VFR conditions. The regulation requires airplanes to carry a 30-minute fuel reserve for daytime operations, and a 45-minute fuel reserve for nighttime operations. In contrast, rotorcraft only require a 20-minute fuel reserve regardless of whether the operation occurs during the day or night. The FAA expanded the fuel reserve requirements in the 1970s following an increase in

[350] See Transponder with Automatic Altitude Reporting Capability Requirement, 53 FR 23356, 23363 (June 21, 1988). Discussion of FAA's "Keep 'em High Program" as an effective method for segregating high-performance aircraft from other traffic.

fuel exhaustion accidents in VFR operations.[351] The stated goal was to prevent future fuel exhaustion accidents. The FAA also noted that the airplane fuel reserve requirements were necessary for night VFR due to the distance between adequately lit airports. For powered-lift, the FAA proposes in § 194.302(j), that powered-lift comply with the airplane reserve requirements in § 91.151(a) because the FAA lacks powered-lift operational data to support use of the less restrictive rotorcraft fuel reserve. This approach is consistent with the FAA's overall approach throughout this proposed SFAR, until such time as the FAA has information to validate a less conservative approach.

The FAA is aware that the use of the term "fuel" rather than the term "energy" could lead individuals to reach the conclusion that this term excludes electric propulsion systems. In a prior rulemaking, the FAA stated it did not intend to preclude the certification of electric propulsion systems or other non-fossil-fuel-based propulsion systems, such as provided by carbon-based fuels or electrical potential, and the FAA maintains that position in this SFAR.[352] The term "fuel systems" also includes a means of storage for the electrical energy provided (e.g., batteries that provide energy to an electric motor) or devices that generate energy for propulsion (e.g., solar panels or fuel cells).[353]

Sections 91.155 and 91.157 prescribe basic VFR and special VFR weather requirements. Under these rules, helicopter operations are permitted at lower weather minima than other aircraft because helicopters operate at lower altitudes and slower airspeeds. In a 1963 rulemaking, the FAA provided different weather minima for helicopters than for airplanes and explained that when a helicopter is below 1,200 feet above the surface at a speed that allows the pilot adequate opportunity to see any air

---

[351] General Operating and Flight Rules and Related Airworthiness Standards and Crewmember Training, 43 FR 46230, 46231 (Oct. 5, 1978).
[352] See Revision of Airworthiness Standards for Normal, Utility, Acrobatic, and Commuter Category Airplanes, 81 FR 96640 – 96641 (Dec. 30, 2016).
[353] For example, § 91.205(b)(9), which refers to a "[f]uel gauge indicating the quantity of fuel in each tank." In instances such as this, the electric battery that stores the energy would be equivalent to the fuel tank.

traffic or other obstruction in time to avoid a collision, those circumstances form an adequate basis to impose a lower visibility minimum.[354]

When explaining the intent of § 91.155, the FAA stated that a helicopter pilot need only remain clear of clouds, regardless of flight visibility, because "[h]elicopters have the ability to operate at lower speeds and with a significantly higher degree of maneuverability than airplanes. These qualities allow a helicopter to be operated at lower visibility and cloud clearance distances while maintaining the same degree of safety as fixed-wing aircraft flying under more restrictive minima."[355]

While powered-lift possess some helicopter performance characteristics, these characteristics vary widely across the range of powered-lift and are typically related to the takeoff and landing portions of the flight. During cruise operations, powered-lift perform similar to an airplane, operating at high speeds and possibly without the ability to maneuver as quickly as a helicopter to avoid a collision with other traffic or obstacles. Therefore, based on the forgoing, this SFAR proposes in § 194.302(k) that powered-lift operating in Class G airspace comply with the same weather minima prescribed in § 91.155(b)(2) for airplanes in such airspace because the airplane-specific requirements in this section provide the appropriate level of risk mitigation for powered-lift operations. Weather minima generic to all aircraft in this section also continue to apply to powered-lift.

Section 91.157 provides the conditions under which special VFR weather minima may be conducted. The majority of this section applies to all aircraft except for paragraphs (b)(3) and (4) which are specific to helicopters. For the reasons described in the previous paragraphs, this SFAR will not incorporate these helicopter exceptions for

---

[354] Air Traffic and General Operating Rules; Definitions and Abbreviations, 28 FR 6704 (Jun. 29, 1963)
[355] Inapplicability of Basic VFR Weather Minimums for Helicopter Operations, 56 FR 48088 (Sep. 23, 1991).

powered-lift. The FAA proposes to continue to require powered-lift to comply with the requirements applicable to all aircraft in this section.

iii. Instrument Flight Rules

Section 91.167 prescribes the fuel requirements for flight in IFR conditions. Under this rule, helicopter operations are permitted with lower fuel minima. Section 91.167 requires aircraft to carry a 45-minute fuel reserve and helicopters to carry a 30-minute fuel reserve. The FAA has determined that powered-lift should initially have a 45-minute fuel reserve, consistent with aircraft requirements. The 30-minute fuel reserve requirement for helicopters was initially granted under SFAR No. 29.[356] Operations under SFAR No. 29 gave the FAA insight to make a safety and risk analysis enabling SFAR No. 29 to be codified in §§ 91.167 and 135.223. The final rule language for § 91.167(a)(3), and similarly for § 135.223, noted that the FAA had gained sufficient experience with operations conducted under SFAR No. 29 to justify a reduction for minimum fuel reserve requirements for helicopters.[357] At this time, the FAA does not have sufficient experience to reduce minima for powered-lift fuel requirements. Accordingly, consistent with the previous approach the FAA took to evaluate and ultimately to lessen minima for helicopters, the FAA will retain the 45-minute fuel reserve requirement applicable to all aircraft for powered-lift while the FAA obtains data during the term of this SFAR. The FAA may reevaluate the 45-minute fuel reserve requirement once it has sufficient data to do so.

Under § 91.167, for operations in weather conditions that require an alternate airport to be identified, no person may operate in IFR flight unless the aircraft has

---

[356] The FAA promulgated SFAR No. 29 in 1975 to allow the Administrator to issue approvals for rotorcraft IFR operations on an interim basis pending the conclusion of a study to determine whether the FAA should establish a "limited" IFR category for these rotorcraft, including flight characteristics and equipment requirements, operating procedures and limitations, flight crew requirements, and training requirements. See FAA Study of Limited IFR Operations in Rotorcraft, 40 FR 2420 (Jan. 13, 1975).

[357] Rotorcraft Regulatory Review Program Amendment No. 5; Operations and Maintenance, 51 FR 40695 (Nov. 7, 1986).

adequate fuel to fly to the first airport of intended landing and to the alternate airport and still have a 45-minute fuel reserve. In accordance with § 91.167(b)(2)(i) for aircraft other than helicopters, when the appropriate weather reports indicate that at least 1 hour before and for 1 hour after the estimated time of arrival, the ceiling will be at least 2,000 feet above the airport elevation and the visibility will be at least 3 statute miles, the fuel reserve necessary to fly to the alternate airport is not required. As explained previously, the FAA does not currently have the operational experience with powered-lift fuel reserves to allow them to utilize the helicopter minima in this section. As a result, the FAA does not propose changes to the current applicability of § 91.167(b)(2)(i), which requires that powered-lift comply with the requirements imposed on aircraft other than helicopters, to ensure an appropriate level of risk mitigation for these new entrant aircraft.

Section 91.169 prescribes the information required for filing an IFR flight plan. Under this rule, helicopter operations are permitted to use lower weather minima before an alternate must be filed because helicopters operate at lower altitudes and slower airspeeds. The final rule language for § 91.169 recognizes the differences in operating characteristics between rotorcraft and airplanes.[358] Rotorcraft fly shorter distances at slower airspeeds than most other aircraft, carry less fuel than an airplane, and generally remain in the air for shorter periods of time between landings. As a result, once a rotorcraft is in a weather system, it is often more difficult for the rotorcraft to fly out of that system to an alternate destination because the rotorcraft has less range capability than an airplane. However, the FAA anticipates powered-lift will generally fly at higher speeds than many rotorcraft and have the ability to maneuver out of a weather system to an alternate destination. The FAA will continue to require powered-lift to comply with

[358] Flight Plan Requirements for Helicopter Operations Under Instrument Flight Rules, 65 FR 3546 (Jan. 21, 2000).

the provisions of § 91.169(b)(2)(i) and (c)(1)(i) as written for aircraft other than helicopters and will plan to evaluate this determination during the term of this SFAR.

Section 91.175 governs takeoff and landing under IFR. Section 91.175(f)(2)(i) and (ii) applies to powered-lift as written because those paragraphs are applicable to all aircraft. At this time, the FAA does not have sufficient experience with powered-lift to allow takeoff operations at the lower weather minima prescribed for helicopters. The FAA considers this approach to be consistent with previous rulemakings where, at initial inception, helicopter operational requirements aligned with airplane operational requirements until sufficient data were available.[359]

Section 91.175(f)(4)(i) requires airplanes operating under part 121 or 135 to comply with the takeoff obstacle clearance or avoidance procedures contained in subpart I of part 121 or subpart I of part 135, as applicable, for IFR takeoffs. Accordingly, the FAA proposes in § 194.302(l) that any powered-lift that would be required to comply with the provisions of subpart I of part 135, as proposed in section VI.D of this preamble, must also comply with the provisions of this paragraph.

3. Subparts C and D - Equipment, Instrument, and Certificate Requirements and Special Flight Operations

Subpart C prescribes the equipment, instrument, and certificate requirements for aircraft. As previously described, powered-lift are already required to comply with provisions applicable to aircraft. The airplane regulations the FAA proposes to apply to powered-lift in this subpart impose certain equipment requirements that the FAA has determined are necessary to provide an adequate level of safety for powered-lift operations.

[359] For example, §§ 91.119 (Minimum safe altitudes: General) and 91.151 (Fuel requirements for flight in VFR conditions) both had requirements identical to airplanes at initial inception which were subsequently relaxed following helicopter operational experience.

Section 91.205 states that no person may operate a powered civil aircraft with a standard category U.S. airworthiness certificate in VFR day or night, IFR, at or above 24,000 feet, in Category II or III operations, or in night vision goggle operations, unless the aircraft contains instruments and equipment specified in this section (or FAA-approved equivalents). Section 91.205(a) references aircraft, but there are also airplane-specific provisions set forth in § 91.205(b)(11) and (14).[360]

Section 91.205(b)(11) requires that small civil airplanes certificated after March 11, 1996, in accordance with part 23, have installed an aviation red or aviation white anticollision light system. The requirement to have an anticollision light system is necessary in order to provide sufficient time for other aircraft to avoid a collision. This requirement invokes the latest airworthiness requirements for all airplanes regardless of type certification date. For powered-lift that meet the definition of small aircraft in § 1.1, the FAA proposes in § 194.302(m) that the position and anti-collision lights meet the requirement set forth in § 23.2530(b), which states that any position and anti-collision lights, if required by part 91, would be required to have the intensities, flash rate, colors, fields of coverage, and other characteristics to provide sufficient time for another aircraft to avoid a collision. The FAA proposes that this requirement apply to small powered-lift to provide an equivalent level of safety to that of small airplanes, and to ensure that those powered-lift have an adequate anticollision lighting system that provides sufficient time for another aircraft to avoid a collision.

Paragraph (b)(14) in § 91.205 requires that small civil airplanes certificated after December 12, 1986, have an installed and approved shoulder harness or restraint system for all seats. The FAA proposes in § 194.302(m) that small powered-lift also require the

[360] As noted earlier in the fuel requirements section, § 91.205(b)(9) references a "[f]uel gauge indicating the quantity of fuel in each tank." Because the FAA considers "fuel" to include any form of energy used by an engine or powerplant installation, including via electrical potential, the electric battery that stores the energy would be equivalent to the fuel tank under § 91.205(b)(9).

installation of an approved shoulder harness or restraint system for all seats, also to provide an equivalent level of safety to small airplanes. The FAA is also proposing that large powered-lift be required to be equipped with shoulder harnesses in accordance with § 91.521, as discussed further in VI.B of this preamble.

Paragraph (d) of § 91.205 prescribes instruments and equipment requirements for IFR flight. Under § 91.205(d)(3), an aircraft must have installed a gyroscopic rate-of-turn indicator unless the aircraft is equipped with a third attitude instrument system installed as provided in § 121.305(j). For airplanes, the third attitude instrument system installed must be usable through flight attitudes of 360 degrees of pitch and roll. For rotorcraft, the third attitude instrument system installed must be usable through flight attitudes of +/- 80 degrees of pitch and +/- 120 degrees of roll. The FAA anticipates that some powered-lift may be capable of exceeding 80 degrees of pitch and/or 120 degrees of roll. Therefore, the FAA proposes in § 194.302(n) that all powered-lift approved for IFR during type certification[361] would be required to comply with the airplane provisions in § 91.205(d)(3)(i) for IFR flight, which require the installation of either a gyroscopic rate-of-turn indicator or a third attitude instrument system usable through flight attitudes of 360 degrees of pitch and roll. The FAA considers the airplane rule to be appropriate for powered-lift to ensure that the powered-lift are equipped to recover from any inadvertent flight attitude encountered.

Section 91.207 requires an emergency locator transmitter (ELT) for airplane operations. An ELT is used to facilitate search and rescue efforts in locating downed aircraft. The ability to locate powered-lift in the event of a crash is essential for reaching survivors as quickly as possible and potentially saving lives. The FAA considers this to be a necessary requirement for powered-lift, particularly as a new entrant aircraft with no

[361] The FAA acknowledges that most powered-lift initial type certification projects are for VFR approval. However, the FAA anticipates that powered-lift operators will seek IFR approval in the future.

civil operational history. Accordingly, the FAA proposes applying § 91.207 to powered-lift in § 194.302(o).

Section 91.213 provides limitations on operations with inoperative instruments and equipment as well as relief for operations with inoperative instruments and equipment for aircraft with and without an approved Minimum Equipment List (MEL). Section 91.213(d) provides specific relief for an aircraft without an approved Minimum Equipment List (MEL). The FAA evaluated whether to propose that powered-lift be allowed to operate without an approved MEL; however, the complexity of the new technology coupled with the lack of operational data supports the application of a conservative MEL approach. Accordingly, the FAA does not propose to apply the provisions set forth in § 91.213(d) to powered-lift.

Section 91.215 describes ATC transponder and altitude reporting equipment and use. Section 91.215(b) states that no person may operate an aircraft in the airspace described in paragraphs (b)(1) through (5) of this section unless that aircraft is equipped with an operable coded radar beacon transponder. The FAA anticipates that all new entrant powered-lift will have a substantial electrical system; however, it may be powered from batteries and not an engine-driven system. The FAA notes that § 91.215(b)(3) and (5) allow aircraft to operate without a transponder if they were certificated without an engine-driven electrical system. The FAA acknowledges that some powered-lift may be certificated without engine-driven electrical systems but does not consider it appropriate to provide relief to new entrant powered-lift because transponders provide critical information, such as aircraft position, speed, and altitude to ATC for aircraft separation. Therefore, the FAA proposes in § 194.305 that all powered-lift be equipped with an operable coded radar beacon transponder as required in § 91.215(b)(1), (2), and (4).

Section 91.219 prohibits the operation of a turbojet-powered U.S.-registered civil airplane unless that airplane is equipped with an approved altitude alerting system or

device. This rule was adopted by the FAA in 2007, allowing flexibility in accommodating technological advances.[362] In a performance-based NAS, operational flexibility depends upon many factors including the performance capability of the aircraft, communication and navigation equipment, the availability of the communication and navigation facilities along the route to be flown, and the performance capabilities of those (communication and navigation) facilities that are made available for use by air traffic management service providers. Turbojet-powered airplanes operate within reduced vertical-separation minimum (RVSM) airspace, often within congested airspace, and in close proximity to other fast-moving aircraft. As a new entrant aircraft, the FAA considers it essential that powered-lift operations are conducted in a manner that capitalizes on existing technological capabilities that improve safety and facilitate collision avoidance in the NAS. The FAA previously determined that an altitude alerting system or device is necessary for turbojet-powered civil airplanes because lack of altitude awareness is accentuated by the high rates of climb and descent.[363] The FAA anticipates that this reasoning also applies to all powered-lift because of their high-performance capabilities, regardless of powerplant type. Accordingly, this SFAR proposes in § 194.302(p) that all powered-lift comply with the altitude alerting requirements under § 91.219.

Section 91.223 prohibits the operation of a turbine-powered U.S.-registered airplane configured with six or more passenger seats, excluding any pilot seat, unless that airplane is equipped with an approved terrain awareness and warning system (TAWS). TAWS provides turbine-powered airplanes operating at or near maximum prescribed speeds in close proximity to the ground with early warning of threats from terrain. This

---

[362] Area Navigation (RNAV) and Miscellaneous Amendments, 72 FR 31661 (Jun. 7, 2007).

[363] Turbojet Powered Civil Airplanes, 32 FR 19191 (Dec. 20, 1967).

early warning allows pilots to react by reducing the time required to perceive these threats.

Powered-lift have the ability to operate similarly to both airplanes and helicopters, so, individually, the current TAWS and HTAWS are not a perfect solution for powered-lift due to each equipment's capabilities and limitations. The FAA considered both TAWS and HTAWS and determined that the current HTAWS specification would provide the best level of safety because HTAWS has a different alerting envelope than TAWS and is designed for low altitude operations, thereby reducing the risk of nuisance alerts.[364] Although there is no specification yet developed that incorporates the features of both TAWS and HTAWS in a single unit, the FAA is proposing to allow a hybrid system in a powered-lift that utilizes the features of a TAWS A system for wing-borne flight and HTAWS for vertical flight modes of operation for compliance with § 91.223. Without a TAWS A/HTAWS hybrid system, the FAA considers the current HTAWS specification would provide the best level of safety without an undue number of nuisance warnings. The FAA proposes in § 194.302(q) that all powered-lift—regardless of powerplant type—with 6 or more seats be equipped with an HTAWS system that meets the Technical Standard Order (TSO) C194 or an FAA-approved TAWS A/HTAWS hybrid system.

In addition, the FAA proposes in § 194.302(q) that powered-lift comply with § 91.223(c), which imposes a requirement for a manual containing appropriate procedures on the use of terrain awareness equipment and the proper flight crew reactions in response to a TAWS activation. Because the FAA is proposing to apply § 91.223, but with HTAWS or a hybrid Class A/HTAWS system, the FAA proposes applying paragraph (c) to powered-lift, thereby requiring their Aircraft Flight Manual to contain the appropriate HTAWS or hybrid system procedures. This will ensure powered-lift

---

[364] For further discussion on TAWS nuisance alerts, see section VI.D of this preamble discussing § 135.154.

equipped with HTAWS or a FAA approved TAWS A/HTAWS hybrid system are operated at a level of safety that a terrain awareness system currently provides for airplanes. Finally, the FAA notes that the exceptions in § 91.223(d) for certain parachuting operations, firefighting, and aerial application of chemicals and other substances also apply to powered-lift.[365]

Section 91.313 prescribes operating limitations for restricted category civil aircraft. Paragraphs (a) through (e) apply to powered-lift because they apply to all restricted category aircraft. Section 91.313(f) is not applicable to powered-lift because powered-lift are not currently authorized to conduct operations under part 133. Section 91.313(g) requires small restricted-category airplanes to be equipped with a shoulder harness or restraint system for each front seat. For the same reasons as discussed regarding applicability of § 91.205(b)(14), the FAA proposes in § 194.302(r) that restricted category small powered-lift require the installation of an approved shoulder harness or restraint system for all seats to provide an adequate level of safety for powered-lift operations.

4. Subpart E - Maintenance, Preventive Maintenance, and Alterations

Subpart E prescribes rules governing the maintenance, preventive maintenance, and alterations of U.S.-registered civil aircraft operating within or outside the U.S. The majority of provisions in Subpart E already apply to powered-lift as they apply to aircraft generally (i.e., §§ 91.401, 91.403, 91.405, 91.407, 91.413, 91.415, 91.417, 91.419 and 91.421)

Section 91.409 prescribes inspection programs to ensure that the aircraft is airworthy. The term and regulations for the issuance of a standard airworthiness certificate describe two conditions that must be met for the aircraft to be considered airworthy. The first condition is that the aircraft must conform to its type design or

[365] Terrain Awareness and Warning System; Final Rule, 65 FR 16735 (Mar. 29, 2000).

properly altered condition. Conformity to an aircraft's type design is considered attained when the aircraft configuration and the components installed are consistent with the drawings, specifications, and other data that are part of the Type Certificate Data Sheet (TCDS). The second condition is the aircraft must be in a condition for safe operation—this refers to the state and condition of the aircraft. Paragraphs (a), (b), and (d) of § 91.409 require an annual, 100-hour or progressive inspection and are applicable to all aircraft except those that fall under the exceptions provided in paragraph (c). Paragraphs (e) through (h) of § 91.409 set forth inspection requirements for more larger aircraft and aircraft with more complex aircraft systems which are more stringent than those provided under paragraphs (a), (b), and (d). Aircraft described in paragraph (e) may only fly when all the systems work in tandem and do not fly if the systems work independently of each other.

Because paragraphs (e) through (h) apply to more complex aircraft, the FAA proposes in § 194.302(s) that these paragraphs apply to technically advanced powered-lift (TAPL), which the FAA proposes to define in this SFAR for purposes of compliance with § 91.409 as a powered-lift that is equipped with an electronically advanced system in which the pilot interfaces with a multi-computer system with increasing levels of automation in order to aviate, navigate, or communicate, only for purposes of compliance with this section.

A powered-lift that is considered a TAPL would be equipped with an electronically advanced multi-computer system that includes one or more of the following installed components: 1) an electronic Primary Flight Display (PFD) that includes, at a minimum, an airspeed indicator, turn coordinator, attitude indicator, heading indicator, altimeter, and vertical speed indicator; 2) an electronic Multifunction Display (MFD) that includes, at a minimum, a moving map using Global Positioning System (GPS) navigation with the aircraft position displayed; 3) a multi-axis autopilot

integrated with the navigation and heading guidance system; and 4) an advanced fly-by-wire-flight control system that utilizes electronically operated controls with no direct mechanical link from the pilot to the control surfaces. The display elements described in (1) and (2) must be continuously visible to ensure that the essential aircraft information is displayed and available to the pilot during all phases of flight.[366] The PFD is a display that provides increased situational awareness to the pilot by replacing the traditional six instruments used for instrument flight with an easy-to-scan single display that provides the horizon, airspeed, altitude, vertical speed, trend, trim, and rate of turn among other key relevant indications. In addition, the PFD is designed specific to controlling the TAPL attitude and altitude relative to the horizon and the surface of the earth, especially when outside visibility is poor or unavailable. The MFD is a display that provides information to the pilot in numerous configurable methods. Often, an MFD will be used in concert with a PFD. The MFD has a different priority; its function is secondary to the PFD. The MFD will have an integrated multi-axis autopilot, navigation, and position awareness information, even though it may include some PFD features for redundancy. The FAA proposes requiring certain minimum display elements for both a PFD and MFD, clarifying what will be considered a PFD or MFD.

The FAA proposes that the described characteristics define TAPL because they will allow the FAA to distinguish between complex and less complex powered-lift and thereby determine which inspection program applies. The FAA will determine whether the powered-lift meets the requirements of a TAPL and it will be indicated in the operator's inspection program documents. Powered-lift that are not considered technically advanced under the definition used for compliance with § 91.409 within this

[366] An example of an electronically advanced system includes an integrated flight control and navigation system.

SFAR must continue to comply with paragraphs (a), (b), and (d) because those provisions apply to "aircraft".

Section 91.411 prescribes the requirements for altimeter system and altitude reporting equipment tests and inspections. The regulation describes the inspection, authorized personnel, and standard for altimeter system equipment used in an airplane or helicopter operation in controlled airspace under IFR. Specifically, paragraph (a) prohibits a person from operating an airplane or helicopter in controlled airspace under IFR unless the static pressure system, altimeter instrument, and automatic pressure altitude reporting system have been tested, inspected, and found to comply with specific requirements outlined in appendices E and F to part 43.[367] Paragraph (b) specifies that the testing conducted pursuant to paragraph (a) must be conducted by the manufacturer of the aircraft, a certificated repair station properly equipped to perform the testing, or a certificated mechanic with an airframe rating. Paragraph (c) states that altimeter and altitude reporting equipment approved under TSOs are considered to be tested and inspected as of the date of manufacture. Finally, paragraph (d) prohibits any person from operating an airplane or helicopter in controlled airspace under IFR above the maximum altitude at which all altimeters and the automatic altitude reporting system of that aircraft have been tested.

Currently, this section is silent on powered-lift; however, the FAA proposes in § 194.302(t) to apply this regulation to powered-lift because it currently applies to both airplanes and helicopters, without differentiation. Powered-lift are new entrant aircraft, and as a result, the FAA does not have sufficient information regarding the operations of all the different powered-lift in development to determine that § 91.411 should not apply, especially considering its current applicability to both airplanes and helicopters. Proposed

[367] Appendix E outlines requirements for testing and inspecting the altimeter system, and appendix F outlines the requirements for testing and inspecting ATC transponders.

application of this regulation ensures a minimum level of safety for operations and maintenance of powered-lift. Properly maintaining, testing, and inspecting powered-lift is vital to the safe operation of these aircraft.

5. Subpart F - Large and Turbine-Powered Multiengine Airplanes and Fractional Ownership Program Aircraft

Subpart F governs the operation of U.S.-registered large airplanes, U.S.-registered turbojet-powered multiengine civil airplanes, and U.S.-registered fractional ownership program aircraft operating under subpart K and not involved in common carriage. While technically subpart F currently applies to all powered-lift that would be used in a fractional ownership program, the FAA has determined that it should also propose to apply subpart F to large powered-lift regardless of powerplant type because other types of engines may be developed and installed on powered-lift that are not necessarily internal combustion engines. The FAA further notes that certain powerplants such as electric engines may have equal or better performance in comparison to internal combustion engines and may be used on powered-lift, which could have higher performance capabilities and should be captured by subpart F regardless of their propulsion type.

The FAA anticipates that U.S.-registered large powered-lift will operate like large airplanes with respect to altitude, speed, passenger carrying capacity, passenger safety, composition of flightcrew, operating environment (e.g., over water), and required safety and rescue equipment. To meet the higher level of airworthiness and operational standards and to enhance safety, the FAA proposes in § 194.302(u) to capture large powered-lift in the applicability section of § 91.501, regardless of powerplant type, system of aircraft ownership, or ownership interest. Because all powered-lift are multiengine,[368] the FAA does not propose to apply subpart F to "multiengine powered-

[368] See section VI.A of this preamble, discussing multiengine powered-lift.

lift", as that would be overly inclusive and impose the subpart F regulatory requirements on all powered-lift.

Section 91.503 describes flying equipment and operating information for airplanes under subpart F. The FAA proposes in § 194.302(v) that this section apply to powered-lift because the FAA anticipates that powered-lift will be used in passenger-carrying operations highly similar to airplanes. Flying equipment and operating information is equally important for both airplanes and powered-lift. The FAA proposes to apply the safety standards required in this section to powered-lift. However, § 91.503(a)(5) references one-engine inoperative climb performance data. The engine out performance data presented may differ depending on the aircraft configuration and should not be limited to only "one-engine inoperative" because some powered-lift have six or more engines and may be able to continue flight after failure of one or more engines. The FAA proposes that powered-lift have an approved aircraft flight manual at the pilot station that contains the engine or multiple engines inoperative climb performance data in accordance with § 91.503(a)(5).

Section 91.505 imposes requirements to be familiar with the emergency equipment installed on the airplane to which a crewmember is assigned and with the procedures to be followed for the use of that equipment in an emergency situation. The crewmember must also be familiar with the Airplane Flight Manual for that airplane, if one is required, and with any placards, listings, instrument markings, or any combination thereof, containing each operating limitation prescribed for that airplane by the Administrator, including those specified in § 91.9(b). The FAA proposes in §194.302(w) that § 91.505 apply to powered-lift because, as stated previously, the FAA expects powered-lift to be used in passenger-carrying operations similar to airplanes. Familiarity with emergency equipment is equally important for both airplanes and powered-lift. Accordingly, the FAA proposes to apply the safety standards required in § 91.505 to

powered-lift. In addition, the FAA proposes that references to "Airplane Flight Manual" apply to powered-lift to the extent that they have an Aircraft Flight Manual approved through the certification process.

Section 91.507 states that no person may operate an airplane over-the-top or at night under VFR unless that airplane is equipped with the instruments and equipment required for IFR operations under § 91.205(d) and one electric landing light for night operations. Each required instrument and item of equipment must be in operable condition. The FAA anticipates that powered-lift will conduct over-the-top and night VFR operations in a manner similar to airplanes and will need the same equipment as airplanes to conduct these operations safely. The FAA proposes in § 194.302(x) that powered-lift comply with the equipment requirements in this section.

Section 91.509(a) prescribes the requirements for overwater operations in airplanes. It provides that no person may takeoff an airplane for a flight over water more than 50 nautical miles from the nearest shore unless the airplane is equipped with a life preserver or approved flotation means for each occupant of the airplane. Powered-lift perform similar to airplanes during extended over-water operations, but with VTOL capability. For helicopters, the definition of extended over-water operations includes both an operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline and more than 50 nautical miles from an off-shore heliport structure. Powered-lift have the capability to land on these off-shore heliport structures in an emergency. The FAA proposes in § 194.302(y) that powered-lift meet the requirements of § 91.509(a) requiring a life preserver or an approved flotation means for each occupant of the powered-lift according to the helicopter specific definition of extended over-water operations. Further, the FAA proposes in § 194.302(y)(1) that when applying this rule to powered-lift, the 50 nautical mile limit may be measured from either the nearest shore or

the nearest off-shore heliport structure in accordance with the definition of extended over-water operations for helicopters in § 1.1.

The FAA proposes a similar approach in § 194.302(y) with the application of § 91.509(b) to powered-lift. Section 91.509(b) states that no person may take off an airplane for flight over water more than 30 minutes flying time or 100 nautical miles from the nearest shore, whichever is less, unless it has onboard specified survival equipment. As stated previously, the FAA determined that the vertical landing capability of powered-lift should be considered in evaluating the applicability of this rule. Powered-lift have the capability to land on off-shore heliport structures in an emergency. Accordingly, the FAA proposes that when applying § 91.509(b) to powered-lift, the FAA proposes in § 194.302(y)(1) to apply the limits of this paragraph as 30 minutes, or 100 nautical miles from the nearest shoreline, or 100 nautical miles from the nearest off-shore heliport structure, whichever is less, consistent with the application of the definition of extended over-water operations for helicopters discussed in the previous paragraph.

Section 91.509(b)(5) specifically requires a lifeline to be stowed in accordance with § 25.1411(g). The lifeline must be in an obvious location, directly accessible, and protected from inadvertent damage. Additionally, § 25.1411(g) imposes requirements pertaining to the location where a lifeline must be attached to an airplane and arranged to enable the airplane occupants to remain on the wing after ditching. This requirement is based on a typical large airplane configuration where standing on the wing or walking on the wing to an emergency raft would be feasible while awaiting rescue. The FAA acknowledges that powered-lift currently undergoing certification are not configured in this manner because these powered-lift do not have a configuration where standing or walking on the wing would be feasible. However, the FAA anticipates that powered-lift may be developed in the future that are capable and certified for ditching and with a wing or comparable structure suitable for evacuation. Accordingly, the FAA proposes in

§194.302(y)(2) that powered-lift subject to the requirements of subpart F will be required to comply with § 25.1411(g) or other airworthiness requirements established in accordance with § 21.17(b) that provide an equivalent level of safety for powered-lift, as reflected in the proposed regulatory text.[369]

Section 91.511 describes requirements for communication and navigation equipment for overwater operations. Paragraph (a) states that no person may take off an airplane for a flight over water more than 30 minutes flying time or 100 nautical miles from the nearest shore unless it has at least the operable radio communication and electronic navigation equipment described in the rule. The ability to contact emergency or rescue services in the event of an offshore ditching is a critical safety requirement for all aircraft. Accordingly, the FAA proposes in § 194.302(z) to require powered-lift to comply with § 91.511 for overwater operations that are more than 30 minutes or 100 nautical miles from the nearest shore or off-shore heliport structure, whichever is less, consistent with the rationale provided in the previous paragraphs for § 91.509(a) and (b).

Section 91.513 describes requirements for emergency equipment for airplanes, such as fire extinguishers, first aid kits, and megaphones. The FAA anticipates that powered-lift will conduct passenger carrying operations where this type of equipment would be necessary in an emergency situation. The FAA considers emergency equipment to be equally important for both airplanes and powered-lift; accordingly, the FAA proposes in § 194.302(aa) to apply the safety standards required in this section to powered-lift.

Section 91.515 prescribes flight altitudes for airplanes operating under VFR. The flight altitudes are designed to ensure adequate terrain clearance from any mountain, hill, or other obstruction to flight for day and night operations. These collision avoidance mitigations are equally important for powered-lift, which the FAA expects would be

---

conducting operations similar to the airplanes that must comply with subpart F. Therefore, the FAA proposes to apply the minimum flight altitudes in § 91.515 to powered-lift in § 194.302(bb).

Section 91.517 describes passenger information and signage displaying the use of seatbelts and non-smoking requirements. Notifying passengers and crew when smoking is prohibited and when safety belts must be fastened is important information to be conveyed to ensure that passenger carrying operations are conducted safely. The importance of conveying this information is the same for both airplanes and powered-lift. As a result, the FAA proposes in § 194.302(cc) that powered-lift comply with the information and signage display requirements in § 91.517. Similarly, § 91.519 describes passenger briefings for the use of seatbelts and non-smoking requirements. The FAA proposes in § 194.302(dd) that § 91.519 also apply to powered-lift because passenger briefings for seatbelt use and smoking are equally important for airplane and powered-lift passenger carrying operations.

The FAA proposes that § 91.521 would be applicable to large powered-lift subject to the operating requirements of subpart F. Specifically, the SFAR proposes that those powered-lift be equipped with a shoulder harness that meets the applicable requirements specified in § 25.785 or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b). The rule is designed to prevent head injuries and is necessary to provide the same level of safety for passenger-carrying operations powered-lift operations as exists in the current rules for airplanes. Therefore, the FAA proposes in § 194.302(ee) that large powered-lift comply with the safety equipment requirements for airplanes in this section. As discussed previously, the FAA is applying certain regulatory requirements applicable to transport category airplanes, such as this one, to large powered-lift in the absence of a uniform transport category standard for powered-lift.

Section 91.523 imposes requirements regarding how carry-on baggage is stored on airplanes with a seating capacity of more than 19 passengers. For baggage stowage and restraining devices, the baggage may be stored in a storage compartment as provided in § 91.525, or it may be stored under a passenger seat in such a way that it will not slide forward under crash impacts severe enough to induce the ultimate inertia forces specified in § 25.561(b)(3).[370] Restraining devices must also limit sideward motion of under-seat baggage and be designed to withstand crash impacts severe enough to induce sideward forces specified in § 25.561(b)(3). The FAA acknowledges that there are presently no powered-lift with more than 19 seats undergoing certification However, the SFAR proposes in § 194.302(ff) that should these aircraft be developed, they would be required to comply with § 91.523, including the safety equipment requirements specified in § 25.561(b)(3) or airworthiness criteria that the FAA may find provide an equivalent level of safety in accordance with § 21.17(b). Applying this regulation to powered-lift with a seating capacity of more than 19 seats will ensure that carry-on baggage is stored safely on powered-lift.

Section 91.525 describes the requirements for the carriage of cargo. The FAA proposes in § 194.302(gg) that this section apply to powered-lift as the FAA does not differentiate between airplanes and powered-lift as it applies to the safety standards required by this section. In the NPRM for § 91.525 (previously codified at § 91.203),[371] the FAA proposed all cargo carried in a passenger compartment be stored in bins, or cargo racks, unless stowed and secured as provided in that section. The FAA considered such requirements necessary to provide for the safety of the occupants in the event of turbulence and to insure, to the extent possible, the crashworthiness of the airplane. These

[370] For a discussion of the type certification process for powered-lift, see section IV.A of this preamble.
[371] Large and Turbine-Powered Multiengine Airplanes, 36 FR 19507, 19510 (Oct. 7, 1971).

considerations are also applicable to carriage of cargo on powered-lift and thus, the FAA proposes that this rule also apply to powered-lift operations.

Section 91.527 describes the requirements for operations in icing conditions. The FAA recognizes that adverse aerodynamic effects on lifting surfaces begin as soon as frost, ice, or snow begin to adhere to the surfaces.[372] Paragraph (a) addresses ground operations and states that no pilot may take off an airplane that has frost, ice, or snow adhering to any propeller, windshield, stabilizing or control surface; to a powerplant installation; or to an airspeed, altimeter, rate of climb, or flight attitude instrument system or wing, except that takeoffs may be made with frost under the wing in the area of the fuel tanks if authorized by the FAA. Section 91.527 addresses airplanes where lift is generated by the wings. Powered-lift may takeoff vertically, but they may also transition to wing-borne flight after takeoff. Powered-lift rely on lifting devices such as rotors during vertical-lift flight mode and traditional airplane surfaces such as wings during wing-borne flight. The FAA recognizes that in addition to wings and control surfaces, powered-lift may have other surfaces that are negatively impacted by frost, ice, or snow adhering to those surfaces, such as rotor blades. These other surfaces are considered critical surfaces, which the manufacturer will identify during certification and which will be outlined in the Aircraft Flight Manual for each powered-lift. Any frost, ice, or snow adhering to a "critical surface" could have an adverse impact on the aircraft's ability to operate safely. To ensure safe operation of powered-lift, all the items listed in § 91.527(a), as well as other critical surfaces as determined by the manufacturer, must be clear from any contamination adhering to their surfaces, including the vertical-lift flight mode lifting devices. The FAA proposes in §194.302(hh) the requirements of § 91.527(a) apply to all powered-lift, including the vertical-flight mode lifting devices.

---

[372] See Removal of Regulations Allowing for Polished Frost, 74 FR 62691 (Dec. 1, 2009).

Section 91.527(b) prescribes rules for IFR flight into known or forecast light or moderate icing conditions, or under VFR into known light or moderate icing conditions unless certain conditions are met as described below. Paragraph (b)(1) is applicable to aircraft, including powered-lift, and requires that the aircraft has functioning deicing or anti-icing equipment protecting each rotor blade, propeller, windshield, wing, stabilizing or control surface, and each airspeed, altimeter, rate of climb, or flight attitude instrument system. Paragraphs (b)(2) and (3) are airplane-specific and the FAA does not propose to apply those provisions to powered-lift. Instead, the FAA proposes in § 194.302(ii) that no pilot may fly a powered-lift under IFR into known or forecast light or moderate icing conditions or under VFR into known light or moderate icing conditions unless it has been type certificated and appropriately equipped for operations in icing conditions, as set forth in § 194.308(i). Section 194.308(i) requires powered-lift seeking certification to operate in known or forecast light or moderate icing conditions would be required to have procedures for the use of the ice protection equipment set forth in the Aircraft Flight Manual.

Section 91.527(c) prescribes the requirements for airplane operations into known or forecast severe icing conditions. The FAA does not have the operational data to support allowing powered-lift operations in severe icing at this time. Accordingly, the FAA does not propose to apply this regulation to powered-lift operations, and as a result, powered-lift operations into known or forecast severe icing conditions would be prohibited.

Section 91.529 addresses flight engineer requirements. The FAA does not propose application of this section to powered-lift because modern aircraft are not designed to require a flight engineer.

Section 91.531 describes SIC requirements for airplanes in subpart F. Section 91.531(a) provides that, except as provided in paragraph (b) of this section, no person

may operate the following airplanes without a pilot designated as SIC: (1) any airplane that is type certificated for more than one required pilot; (2) any large airplane; and (3) any commuter category airplane. A powered-lift certificated for more than one pilot will be subject to the same safety considerations as airplanes certificated for more than one pilot. Accordingly, the same safety standards should apply and the FAA proposes in § 194.302(jj) that paragraph (a)(1) applies to powered-lift as written. Similarly, the FAA codified the requirement to have a designated SIC for large airplanes because of the need for an increased crew due to the complexity of operating such aircraft. These standards likewise apply to large powered-lift and, resultantly, the FAA proposes in § 194.302(jj) to apply paragraph (a)(2) to powered-lift as written. Lastly, the FAA proposes not to apply paragraph (a)(3) to powered-lift because there are currently no commuter category powered-lift and no new aircraft can be certificated for that category as there are no longer any certification standards for commuter category aircraft certification in the Federal Aviation Regulations. As powered-lift are new-entrant aircraft, there is no way to certificate these powered-lift as commuter aircraft.

Section 91.531(b)(1) states that an airplane certificated for operation with one pilot may be operated without a pilot designated as SIC. Applying the airplane rule to powered-lift, as proposed in § 194.302(jj), will ensure that the aircraft is operated in accordance with its type certification basis for crew complement. This provides an appropriate level of safety as it is consistent with the existing rule. Next, § 91.531(b)(2) prescribes that large airplanes or turbojet-powered multiengine airplanes that hold a special airworthiness certificate may operate without a designated SIC in certain circumstances. For the reasons stated in the applicability discussion of § 91.501, the FAA proposes in § 194.302(jj) that § 91.531(b)(2) apply to all large powered-lift that hold a special airworthiness certificate and meet the requirements of § 91.531(b)(2)(i) and (ii), regardless of powerplant type.

Section 91.531(c) states no person may designate a pilot to serve as SIC, nor may any pilot serve as SIC, of an airplane required under this section to have two pilots unless that pilot meets the qualifications for SIC prescribed in § 61.55. Consistent with the discussion in section V.D applying the SIC qualification requirements of § 61.55 to powered-lift pilots, § 91.531(c) should also apply to powered-lift to maintain the level of safety for powered-lift as provided for airplanes. The FAA proposes that paragraph (c) apply to powered-lift.

Section 91.533 describes flight attendant requirements for airplanes with more than 19 passengers. The FAA acknowledges that at this time there are no powered-lift undergoing type certification with more than 19 seats. However, the FAA recognizes that flight attendants are critical for passenger safety, especially for inflight emergency situations or where an emergency evacuation is required. The FAA proposes in § 194.302(kk) that this section apply to powered-lift with more than 19 passengers onboard if they are certificated for civil operations during the duration of the SFAR. This approach will provide the same level of safety for powered-lift as is currently provided for airplanes.

6. Subpart G - Additional Equipment and Operating Requirements for Large and Transport Category Aircraft

Subpart G, beginning with § 91.601, applies to the operation of large and transport category U.S.-registered civil aircraft and specifies additional equipment and operating requirements. The FAA anticipates that U.S.-registered large powered-lift will operate similar to airplanes when considering altitude, speed, passenger carrying capacity, passenger safety, composition of flight crew, operating environment (e.g., over water), and required safety and rescue equipment. For these reasons, the FAA does not differentiate between airplanes and powered-lift when it relates to the safety standards required by this section. The FAA proposes that the airplane requirements contained in

the following listed sections of this subpart apply to large powered-lift in order to meet the higher level of airworthiness and equipment standards for aircraft that will be carrying larger amounts of passengers, and for the reasons described in section IV.A of this preamble.

Subpart G also contains airplane regulations that are subject to certain airworthiness certification provisions. The FAA will determine whether to apply the specific airworthiness requirement for the equipment required by subpart G or other airworthiness criteria that provide an equivalent level of safety the type certification process under § 21.17(b), as discussed previously regarding the applicability of part 91 subpart F.

Section 91.603, Aural speed warning device, requires that a transport category airplane be equipped with an aural speed warning device that complies with § 25.1303(c)(1). The FAA proposes in § 194.302(ll) that this regulation apply to large powered-lift to provide an equivalent level of safety to currently certificated airplanes under Subchapter C airworthiness standards. Powered-lift subject to § 91.603 must be equipped with an aural speed warning device that complies with § 25.1303(c)(1) or airworthiness criteria that the FAA has determined provides an equivalent level of safety in accordance with § 21.17(b).

Section 91.605 prescribes transport category civil airplane weight limitations. Powered-lift are capable of performing both vertical takeoffs and landings, and takeoffs and landings using wing-borne lift similar to an airplane. The FAA proposes that certain provisions in § 91.605 apply to large powered-lift to ensure those aircraft can safely takeoff and land in accordance with the performance information in the Aircraft Flight Manual and taking into consideration altitude and temperature. This application of the rule provides flexibility to operators seeking to maximize the novel capabilities of powered-lift while maintaining a high level of operational safety.

Section 91.605(a) prescribes takeoff requirements for transport category airplanes (other than a turbine-engine-powered airplane certificated after September 30, 1958). This regulation applies only to non-turbine powered airplanes that were type certificated without an Airplane Flight Manual. All new entrant powered-lift type certificated under § 21.17(b) will be required to have an Aircraft Flight Manual; accordingly, the FAA does not propose to apply § 91.605(a) to powered-lift for this SFAR.

Section 91.605(b) contains references to an Airplane Flight Manual and prohibits operations contrary to the flight manual. Section 91.605(b)(1) states that no person operating a turbine-engine-powered transport category airplane may take off that airplane at a weight greater than that listed in the Airplane Flight Manual. The calculation for determining that takeoff weight must consider the elevation of the airport and the ambient temperature existing at the time of takeoff. This regulation provides an important performance criterion to ensure that operators of an aircraft consider the effects of altitude and temperature when determining the maximum allowable takeoff weight. The effects of altitude and temperature are important to consider because aircraft performance is reduced as the altitude and the temperature is increased. This is especially true for takeoff operations, where an increase in altitude and temperature causes a decrease in aircraft performance. An increase in altitude and temperature also causes an increase in takeoff distance required and a decrease in the maximum allowable takeoff weight. Adherence to the performance limitations in the Aircraft Flight Manual is critical for the safe operation of any aircraft, including powered-lift whose performance is also negatively impacted by increased altitude, temperature, and weight. Therefore, the FAA proposes in § 194.302(mm) to apply § 91.605(b)(1) to large powered-lift—regardless of whether they will takeoff vertically or using wing-borne lift similar to an airplane—and that have the takeoff performance information in the aircraft flight manual.

Section 91.605(b)(2) stipulates no person operating a turbine-engine-powered transport category airplane may take off at a weight (allowing for normal consumption of fuel and oil in flight to the destination or alternate airport) if the weight of the airplane on arrival would exceed the landing weight as contained in the Airplane Flight Manual taking in consideration the elevation of the destination or alternate airport and the ambient temperature anticipated at the time of landing. As described in the previous paragraph, these computations must include the elevation of the take-off and the ambient temperature at the time of takeoff. This regulation establishes an important pre-takeoff planning criterion that must consider the maximum landing weight to ensure that the airplane is at a weight that will allow a landing that is within the performance capabilities of that aircraft. The FAA proposes in § 194.302(nn) that paragraph (b)(2) apply to large powered-lift—regardless of whether they will land vertically or using wing-borne lift similar to an airplane—and that have the landing performance information in the aircraft flight manual. Applying this paragraph will help ensure that large powered-lift are operated at the same level of safety required for transport category airplanes.

Section 91.605(b)(3) and (b)(4)(ii) also contain additional takeoff criteria for turbine-engine-powered transport category airplanes, such as wet runway and clearway distances. The FAA proposes in § 194.302(oo) to apply these requirements to certain large powered-lift to ensure that published flight manual limitations are not exceeded when powered-lift execute takeoff operations that utilize wing-borne lift, similar to an airplane, and have that takeoff performance information contained in the flight manual. The FAA proposes paragraphs (b)(3) and (b)(4)(ii) apply to large powered-lift that execute takeoff operations using wing-borne lift and that have takeoff performance information in the flight manual.

Section 91.605(c) sets specific requirements for takeoff distances and runway lengths for turbine-engine-powered transport category airplanes certificated after August

29, 1959. The FAA considers that these provisions are equally important and necessary for powered-lift to safely execute takeoff operations that utilize wing-borne lift. The FAA proposes (also in § 194.302(oo)) that this paragraph apply to large powered-lift executing takeoff operations that utilize wing-borne lift and have takeoff performance information in the aircraft flight manual.

Section 91.609 sets forth requirements for FDR and cockpit voice recorder (CVR) in large and transport category aircraft. Section 91.609(a) and (b) already apply to powered-lift because those paragraphs apply to "aircraft." Paragraphs (f), (g), and (k) also already apply to operators of powered-lift who are otherwise required by part 194 to comply with this section. Section 91.609(c)(1) requires that a multi-engine, turbine-powered airplane or rotorcraft having a passenger seating configuration, excluding any pilot seat, of 10 or more, that has been manufactured after October 11, 1991, unless it is equipped with one or more approved flight recorders that utilize a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. Additionally, this paragraph requires that the flight recorder must retain no less than 8 hours of aircraft operation. The FAA proposes in § 194.302(pp) that a powered-lift, regardless of the type of powerplant, that otherwise meets the threshold requirements of this paragraph be required to comply with this paragraph. However, § 91.609(c)(1) specifies that the parameters for the flight recorder that must be recorded are contained in part 91, appendix E or F, which are specific to airplanes or helicopters. As stated previously, many powered-lift will be manufactured combining the design features of an airplane and helicopter, to varying degrees. In place of appendices E and F to part 91,[373] the FAA has drafted new FDR tables for part 194,[374] which outline the FDR specifications for powered-lift under part 91, in proposed §§ 194.312 and 194.313. In

[373] See appendix E to part 91, Airplane Flight Recorder Specifications, and appendix F to part 91, Helicopter Flight Recorder Specifications, 14 CFR part 91.
[374] The SFAR tables are found in the regulatory text within the SFAR amendment.

developing these tables, the FAA applied the FDR requirements from the airplane and helicopter appendices to powered-lift, dependent on which operational flight mode is in use (i.e., wing-borne flight mode or vertical-lift flight mode). In addition, the FAA replaced helicopter-specific nomenclature to accommodate powered-lift. For example, helicopter flight controls, as written, describe pedals and collective controls, which may not apply to powered-lift. In addition, the FAA changed the terminology that provided directional controls for "ascent and descent". Notwithstanding slight nomenclature changes within the parameters, the FAA did not change the other information and numbers within the tables. The FAA invites comments on these new draft tables to ensure that the FAA has adequately addressed all of the requirements for these novel aircraft.

Section 91.609(c)(3) requires that all airplanes and rotorcraft subject to § 91.609(c)(1) manufactured on or after April 7, 2010, must meet the FDR requirements of § 23.1459, § 25.1459, § 27.1459, or § 29.1459, as applicable, and retain at least the last 25 hours of recorded information using a recorder that meets the standards of TSO-C124a, or later revision. The FAA proposes in § 194.302(pp) that powered-lift comply with this requirement to provide a level of safety equivalent to airplanes and rotorcraft.

Section 91.609(d) requires that whenever a flight recorder required by § 91.609 is installed, it must be operated continuously from the instant the airplane begins the takeoff roll or the rotorcraft begins lift-off until the airplane has completed the landing roll or the rotorcraft has landed at its destination. The FAA proposes in § 194.302(pp)(3) to require powered-lift to comply with this section by requiring that the flight recorder be operated continuously from the earlier of when the powered-lift begins the takeoff roll or begins lift-off until the latter of when the powered lift has completed the landing roll or has landed at its destination. This will ensure the same level of safety is provided for powered-lift as exists in the current regulations for airplanes and rotorcraft.

Section 91.609(e) requires that unless otherwise authorized by the Administrator, after October 11, 1991, no person may operate a U.S. civil registered multiengine, turbine-powered airplane or rotorcraft having a passenger seating configuration of six passengers or more and for which two pilots are required by type certification or operating rule unless it is equipped with an approved CVR. CVRs enhance safety and are required in turbine-powered airplanes and rotorcraft carrying a certain passenger count as a necessary hazard analysis tool used during an accident investigation. As early as 1978, the FAA has noted that consideration should be given to requiring Ground Proximity Warning Systems (GPWS), CVR, and FDR equipment on turbojet-powered airplanes with 10 or more passenger seats due to the complexity and high-performance characteristics of those airplanes.[375] These sources of information aid in determining causal and contributing factors in accident and incident investigation. Amendments issued in response to NTSB recommendations as well as congressional mandates identify the FAA's broader responsibility to apply these appropriately to all aircraft with certain seating capacities.[376] The CVR provides accident investigation information that is unattainable from any other source with valuable auditory information such as sounds captured in the cockpit. Accordingly, the FAA proposes in § 194.302(pp), regardless of the type of powerplant, that powered-lift which have a passenger seating configuration of six or more and for which two pilots are required by type certification or operating rules, will be required to comply with all the paragraphs of paragraph (e). This will ensure that powered lift operate as safely as airplanes and rotorcraft.

Section 91.609(h) is applicable to legacy airplanes certificated before April 7, 2010. It cannot apply to new entrant aircraft and is accordingly not applicable to powered-lift.

---

[375] See Regulatory Review Program; Air Taxi Operators and Commercial Operators, 43 FR 46742, 46768 (Oct. 10, 1978).
[376] Id. at 46742.

Section 91.609(i) and (j) apply to both airplanes and rotorcraft. The FAA considers CVRs and FDRs to be necessary safety equipment on airplanes and rotorcraft and proposes in § 194.302(pp) that these requirements also be applicable to powered-lift. The same concerns regarding ensuring data is recorded from the cockpit or flight in the event of an accident or incident are true for powered lift as they are for airplanes and helicopters.

Section 91.611 authorizes ferry flights with one engine inoperative for airplanes with three or four engines. The rule was written specifically for airplanes and is based on airplane performance characteristics. The FAA acknowledges that some powered-lift may operate as an airplane during takeoff but determined this section should not be applicable to large powered-lift under the SFAR due to the lack of data to support safe powered-lift operations with an inoperative engine. The FAA expects to obtain more data during the term of this SFAR to determine if powered-lift can safely operate with an inoperative engine.

Section 91.613 requires airplane compartment interiors to meet the flame propagation requirements set forth in § 25.853 or § 25.856. The part 25 certification standard for flame propagation materials reduces the spread of fire within the aircraft and in the event of a post-crash fire, as well as reducing the penetration of fire for an external source such as an engine firewall. Section 91.613(b)(2) is applicable to transport category airplanes manufactured after September 2, 2005 and the FAA proposes in § 194.302(qq) that it be applied to powered-lift of similar size and capacity under the SFAR due to the safety mitigations this rule provides. For large powered-lift, the FAA proposes that the thermal/acoustic installation materials required by § 91.613(b)(2) meet the requirements of § 25.856 or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b). Section 91.613(a) does not apply to

powered-lift because SFAR 41 terminated in September 1983 and is limited to type design changes for airplanes issued prior to October 1979.

7. Subpart K - Fractional Ownership Operations

Subpart K was added to part 91 in 2003 to establish criteria for fractional ownership programs. It allows fractional owners and the management company to share operational control of the aircraft and delineates operational control responsibilities. It also contains regulatory safety standards for operations under fractional ownership programs, including management operations, maintenance, training, and crewmember flight and duty requirements. Subpart K currently has two powered-lift references in §§ 91.1001(b)(10) and 91.1053(a)(2). These references were included when part 91 subpart K was codified to prescribe specific applicability and crew training requirements for fractional ownership operations. Pilot training and qualification requirements under this subpart are discussed in section V of this preamble. In addition to the specific powered-lift references, many subpart K sections impose requirements on aircraft, which include powered-lift.

As stated in section V.L of this preamble, the following sections of subpart K will apply to large powered-lift without regard to type of powerplant.

Section 91.1025 prescribes program operating manual contents. The manual must set forth the program's procedures and policies to ensure the safe operation of the aircraft they use. The manual content requirements of a Destination Airport Analysis specified in § 91.1025(o) are only required if the aircraft meets the thresholds set forth § 91.1037, Large transport category airplanes: Turbine engine powered; Limitations; Destination and alternate airports. The FAA anticipates some powered-lift will be manufactured in a way that would trigger the safety requirements of § 91.1037. This section is already applicable to powered-lift that operate under subpart K; however, the FAA also clarifies that if a specific powered-lift meets the requirements of § 91.1037, then all of the requirements of

§ 91.1025(o), including § 91.1025(o)(7) which currently only applies to airplanes, would be applicable as well, as set forth in § 194.302(rr). This proposal will ensure that an adequate level of safety is maintained for powered-lift that meet the performance requirements of § 91.1037, and that any inoperative equipment is considered when Destination Airport Analysis is performed.

Section 91.1037 addresses large transport category airplanes and should apply to large powered-lift. The FAA perceives that large powered-lift will operate similar to large transport-category airplanes when considering altitude, distance, speed, passenger carrying capacity, passenger safety, composition of flight crew, operating environment (e.g., over water), and required safety and rescue equipment. Specifically, § 91.1037(e) requires that, unless based on a showing of actual operating landing techniques on wet runways, a shorter landing distance (but never less than that required by paragraph (b) or (c)) has been approved for a specific type and model airplane and included in the Airplane Flight Manual, no person may take off a turbojet airplane when the appropriate weather reports or forecasts, or any combination of them, indicate that the runways at the destination or alternate airport may be wet or slippery at the estimated time of arrival unless the effective runway length at the destination airport is at least 115 percent of the runway length required under paragraph (b) or (c). The FAA anticipates that due to the VTOL capabilities of powered-lift, many of these aircraft may not need to compute a landing distance as required by this section. However, certain powered-lift may conduct landing operations similar to an airplane. Accordingly, the FAA proposes in § 194.302(rr) this entire section be applicable to large powered-lift that are certificated to conduct landing operations in wing-borne flight mode as indicated in the aircraft flight manual.

Section 91.1039(c) prohibits a pilot on a program aircraft operating a program flight from beginning an instrument approach procedure to an airport unless the MDA or

Decision Altitude (DA) and visibility landing minimums prescribed in part 97 or in the program manager's management specifications are increased by 100 feet and 1⁄2 mile respectively, but not to exceed the ceiling and visibility minimums for that airport when used as an alternate airport, for each PIC of a turbine-powered aircraft who has not served at least 100 hours as PIC in that type of aircraft. This regulation is based on § 135.225(e), and was incorporated into the subpart K rules for Fractional Ownership operations because the FAA considered that the safe execution of an instrument approach to the lowest minimums requires the highest degree of pilot familiarity with the airplane, its controls, instruments, and performance characteristics, and that 100 hours of experience in a new type of airplane as PIC in air carrier or commercial operations is necessary in order to achieve this degree of familiarity. This familiarity requirement is still relevant to operations conducted in airplanes today and pilots of all powered-lift should also possess the highest degree of familiarity with their aircraft, its controls, instruments, and performance requirements, not only those operating turbine-powered powered-lift. The FAA also anticipates the pilots of any powered-lift will experience an additional workload as the aircraft transitions from wing-borne to vertical-lift flight, during the landing phase while in reduced visibility. The FAA is proposing that the PIC of all powered lift operating under subpart K increase the MDA or DA and visibility landing minimums as required by § 91.1039(c), as set forth in proposed § 194.304.

Section 91.1041 addresses aircraft proving and validation tests. Section 91.1041 sets out the parameters and the requirements for when Proving and Validation Tests must be accomplished by a fractional ownership program. Proving tests are necessary to evaluate each fractional ownership program’s ability to conduct operations safely and in accordance with the applicable regulations. Proving tests, under § 91.1041, consist of a demonstration of the fractional ownership program’s ability to operate and maintain certain aircraft new to the operator’s fleet or the certificate holder’s ability to conduct a

particular kind of operation. Additionally, it is each fractional ownership program manager's responsibility to show that each aircraft can be operated safely and in compliance with the regulations and their procedures.

Section 91.1041(b) requires a fractional ownership program manager to conduct proving tests in a turbojet airplane if they have not previously proved a turbojet airplane. The FAA expects powered-lift, regardless of the powerplant, to have additional complexity due to their design and operation, and that these features have not been available and experienced by the civilian market to date. To ensure a high level of safety is maintained when these aircraft are operated, the FAA is proposing in § 194.302(ss) that a fractional ownership program manager that has not previously proven a powered-lift in operations under subpart K, be required to conduct at least 25 hours of proving tests acceptable to the Administrator as detailed in § 91.1041(b)(1) through (3).

The FAA requires validation testing for certain authorizations, and for the addition of certain aircraft that were previously proved or validated but are not of the same make or model, or of similar design. These tests are required for aircraft that require two pilots for flight in VFR conditions, or turbojet airplanes. For the same reasons cited above for proving tests, validation testing required by § 91.1041(d) should be applicable to all powered-lift. The FAA proposes in § 194.302(ss) that validation testing be required when a program manager requests authorization to use a powered-lift, unless a powered-lift of the same make or similar design has been previously proved or validated by that program manager in operations under subpart K.

Section 91.1045 contains additional safety equipment requirements for program aircraft. The FAA is proposing that this rule apply to powered-lift in proposed § 194.302(tt). For powered-lift with more than 30 seats or a payload capacity of more than 7,500 pounds, the FAA proposes that § 91.1045(a) applies; and for powered-lift with 30 seats or fewer and a payload capacity of 7,500 pounds or less, § 91.1045(b) applies.

Section 91.1045(a)(3) and (b)(3) specify TAWS as the required terrain awareness and warning system requirement. The FAA considered both TAWS and HTAWS because of powered-lift's ability to operate similar to both airplanes and helicopters. The FAA determined that the current HTAWS specification would provide the best level of safety without an undue number of nuisance warnings. The FAA proposes that § 91.1045(a)(3) and (b)(3) apply to powered-lift, and that powered-lift comply with the requirements in § 194.307(q) of this SFAR. For further discussion of the FAA's proposal regarding TAWS vs. HTAWS, please see VI.B.

Section 91.1045(b)(5) refers to airborne thunderstorm detection equipment required by § 135.173 or airborne weather radar required by § 135.175, as applicable to the aircraft specified in each section. This section is applicable to airplanes having a passenger-seat configuration of 30 seats or fewer, excluding each crewmember, and a payload capacity of 7,500 pounds or less, and any rotorcraft (as applicable). The use of airborne thunderstorm detection equipment or airborne weather radar contributes to greater safety in operations because it enables the pilot to detect and locate severe adverse weather areas early. The equipment also enables the pilot to avoid these areas or take other action necessary for safety of flight. Therefore, the FAA proposes in § 194.302(uu) that § 91.1045(b)(5) apply to powered-lift. As an additional note, the requirements of §§ 135.173 and 135.175 apply as-written to powered-lift because they apply to aircraft and the FAA is not proposing to apply the helicopter provisions of those sections to powered-lift.

The provisions in § 91.1109, with the exception of § 91.1109(b)(4), are applicable to powered-lift because they apply to aircraft. Section 91.1109(b) requires each person desiring to establish or change an approved inspection program under this section to submit the inspection program for approval to the Flight Standards office that issued the program manager's management specifications. Under § 91.1109(b)(4), the inspection

program may be derived from an airplane inspection program approved under § 125.247 and currently in use under part 125. The FAA has recently proposed to amend the applicability of part 119 and allow powered-lift operations in part 125 in the Update to Air Carrier Definitions NPRM. However, the FAA is not including part 125 in this SFAR because there are no powered-lift currently in the certification process (or expected in the foreseeable future) that meet the applicability requirements of part 125. Although § 91.1109(b)(4) is not applicable to powered-lift, the remaining provisions in § 91.1109 apply to powered-lift because they apply to all aircraft.

Additionally, the FAA noted that § 91.1115(b)(1) uses the word "airplane" and the rest of paragraph (b) uses the word aircraft. In examining the NPRM and the final rule promulgating subpart K, the FAA expressed no intent to call out paragraph (b)(1) for airplanes only. The NPRM and final rule expressed intent to hold operations under subpart K to the same safety standards as other operations. Section 91.213, the other inoperative instruments and equipment regulation within part 91, uses the word aircraft throughout and was the model language used for § 91.1115. The word airplane was substituted for the word aircraft in § 91.1115(b)(1) in error. The FAA proposes a technical amendment to § 91.1115(b)(1) to change the word "airplane" to "aircraft." Changing this reference will not adversely affect any other category of aircraft. As changed, this section would then apply to powered-lift.

The Continuous Airworthiness Maintenance Program (CAMP) program manager is primarily responsible for maintaining the airworthiness of the program aircraft, including airframes, aircraft engines, propellers, rotors, appliances, and parts, including for powered-lift. There are also other obligations, such as preparing mechanical reliability reports and mechanical interruptions summaries. The CAMP manager is also responsible for maintaining the operations manual and maintaining the records required by § 91.1427 for the specified amount of time. Fractional ownership CAMP requirements apply to

powered-lift because, similar to the fractional ownership program discussed above, the CAMP Manager's obligations are applicable to all aircraft in the program, including powered-lift. As discussed in section VII.A.2, the FAA reiterates that the term "engine" includes electric engines and any other powerplants.

C. Part 97 Rules for Powered-Lift

Part 97 of title 14 prescribes standard instrument approach procedures, obstacle departure procedures, and weather minimums that apply to IFR takeoffs and landings at civil airports in the U.S.[377] Section 97.3 defines Copter Procedures as helicopter procedures, with applicable minimums as prescribed in § 97.35.[378] The definition is limited to helicopters because when part 97 was promulgated, the FAA did not envision that aircraft would have hybrid airplane and helicopter characteristics. Consequently, powered-lift are currently excluded from using Copter Procedures even if they are able to perform the operations safely. The purpose of this section of the SFAR is to propose a regulatory pathway that allows powered-lift to utilize the Copter Procedures specified in § 97.3.

Part 97 was established because the FAA recognized the technological advances that supported the ability to take-off and land safely at airports while operating under IFR. It was originally codified in 1963 without reference to Copter Procedures, but the term was added in 1972[379] and defined as: helicopter procedures, with applicable

---

[377] Instrument means a device using an internal mechanism to show visually or aurally the attitude, altitude, or operation of an aircraft or aircraft part. It includes electronic devices for automatically controlling an aircraft in flight. See, 14 CFR 1.1. The IFR are applicable to an aircraft, pilot, and operation when operating in IMC as opposed to VMC.

[378] The minimums prescribed in §§ 97.21 through 97.37, including § 97.35, are not published in the Code of Federal Regulations. *Federal Register* citations affecting these procedures can be found in the List of CFR Sections Affected (LSA), April 2020 at https://www.govinfo.gov/content/pkg/LSA-2020-04/html/LSA-2020-04-title14.htm. Section 97.20 prescribes the Standard for Terminal Instrument Procedures (TERPs), which is documented on FAA Forms 8260-3, 8260-4, 8260-5, and 8260-15A, and depicted on aeronautical charts published by the FAA at https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/. They are incorporated by reference pursuant to 5 U.S.C. 552(a) and 1 CFR part 51.

[379] General Operating and Flight Rules, 37 FR 6286 (Mar. 28, 1972).

minimums as prescribed in § 97.35. Helicopters may also use other procedures prescribed in Subchapter C of this part and may use the Category A minimum descent altitude (MDA), or decision height (DH). The required visibility minimum may be reduced to one-half the published visibility minimum for Category A aircraft, but in no case may it be reduced to less than one-quarter mile or 1,200 feet runway visual range (RVR). HAL means height above a designated helicopter landing area used for helicopter instrument approach procedures. Point in space means a helicopter instrument approach procedure to a point in space to a missed approach point that is more than 2,600 feet from an associated helicopter landing area.[380]

Part 97 was further amended in 2002 to allow for technological advances that support area navigation (RNAV), such as GPS, while retaining the current ground-based systems.[381] The amendments also changed the Standard Instrument Approach Procedures name to Standard Instrument Procedures to reflect that part 97 refers to both takeoffs and approaches, and incorporated the term helipoint, defining it as the aiming point for the final approach course for heliports. Later amendments clarified terminology and updated certain terms for ICAO consistency.

The FAA proposes in § 194.305 that powered-lift operators seeking to use Copter Procedures must use a powered-lift that has a standard airworthiness certificate for IFR operations and meet equivalent system design and stability as helicopters currently type certificated for instrument flight under the airworthiness standards in appendix B to parts 27 and 29. If a powered-lift does not meet that equivalency, it would contain a limitation in its aircraft flight manual prohibiting use of copter procedures. The specific airworthiness standards will be established during the type certification process. The

---

[380] Designation of Federal Airways, Controlled Airspace and Reporting Points, 37 FR 6286 (Mar. 28, 1972).
[381] Area Navigation (RNAV) and Miscellaneous Amendments, 72FR 31661 (Jun. 7, 2007).

criteria the FAA considers necessary for powered-lift to conduct Copter Procedures under part 97 are explained below.

1. Copter Instrument Procedures

Copter instrument procedures (IP) provide an instrument procedure along a predetermined course to safely allow helicopter traffic to transition between VFR and IFR for approaches and departures. The criteria for these approaches or departures are defined in the FAA Orders Standard for Terminal Instrument Procedures (TERPS) Manuals and presume a certain level of vehicle performance and stability. For example, copter instrument approach procedures (IAPs) are designed presuming nominal descent rates and gradients over a range of given airspeeds. Those approaches also presume the maximum and minimum descent glideslope and gradient that may be encountered while maintaining vertical navigation accuracy. In addition, the design of the IAPs allow for the aircraft to descend to the minimum descent altitude (MDA) or decision altitude (DA) prior to or upon arriving at the missed approach point (MAP). At the MAP, the pilot must assess whether the flight can safely and legally proceed to the destination in the meteorological conditions present. Continuation of the flight beyond the MAP must be accomplished via a visual transition segment in accordance with the design of the IAP. The MAP is located such that the aircraft can execute the missed approach procedure or visually transition to a safe landing by using a nominal deceleration rate. Both the missed approach procedures and departure procedures are designed with the underlying minimum assumption of aircraft performance as defined in the TERPS manual.

Powered-lift IFR certification and compatibility with instrument approaches will be assessed during the aircraft type certification process. The aircraft's ability to conduct these types of operations will be contained in the approved aircraft flight manual as part of the operation limitations and the types of operation in accordance with §§ 23.2620, 25.1583, 27.1583, and 29.1583, 14 CFR part 27 or 29, appendix B, section IX, or

airworthiness criteria developed in accordance with § 21.17(b) that establish an equivalent level of safety.

2. Airworthiness Evaluation of Eligibility for Copter Procedures

For powered-lift seeking approval to fly IFR and to use Copter Procedures, the FAA will assess the aircraft's stability, system, and equipage for IFR operations as compared to helicopters. This assessment will occur during the type certification process. A powered-lift design that meets standards that provide an equivalent level of safety to the relevant standards in parts 27 and 29 can be certificated for IFR flight and authorized to execute Copter Procedures. A powered-lift that does not possess these characteristics may still be certificated for IFR but will be prohibited from performing Copter Procedures and have a limitation in the Aircraft Flight Manual to that effect.

For helicopters, appendix B to parts 27 and 29 ("Airworthiness Criteria for Helicopter Instrument Flight") is based on the traditional operating profile of a classically designed helicopter and flight control system. The safety objectives contained within appendix B for IFR approval focus on an increase in stability, system design, and system safety over a part 27 or 29 Helicopter only approved to operate under VFR. The FAA does acknowledge that for powered-lift, the appendix B assumptions are not directly compatible due to the aircraft's hybrid capability and flight controls. For powered-lift, safety objectives equivalent to appendix B will be incorporated as part of the type design requirements, specifically focusing on 1) adequate static stability, 2) adequate dynamic stability, and 3) system safety.

Static stability is the aircraft's ability to maintain or return to its original flight path, and dynamic stability is the aircraft's ability to return to a stabilized condition after being disturbed. The ability to maintain uniform flight conditions and recover from disturbances without requiring exceptional pilot skill and ability is critical when assessing an aircraft for IFR approval. System safety is a design process that ensures adequate

robustness of the aircraft systems based on the failure hazard analysis developed during the type certification process. It involves identifying risks to the entire system and developing mitigations based on how the aircraft responds to system failures. Under the FAA's proposal, powered-lift designs may include additional design redundancy compared to a classically designed helicopter to ensure that the crew could safely manage any failures.

The FAA proposes that powered-lift seeking approval for IFR operations meet equivalent standards in appendix B regarding system safety and stability during the type certification process. The specific requirements will be established during the type certification process when the FAA evaluates the types of operations that the applicant intends to conduct. The FAA will assess those operations, which may include IFR and Copter Procedures, as part of the type design approval process to ensure that they can be conducted safely. Those operations will be identified in the limitations of the aircraft flight manual along with any other specific limitations and procedures necessary for safe operation.

Upon termination of the SFAR and in accordance with any changes made permanent after the expiration of the SFAR, the FAA expects to update guidance material, such as the TERPS Manual, certain Advisory Circulars,[382] the Airman Information Manual (AIM), and the Aeronautical Information Publication (AIP).

Navigation Specification (NavSpec) RNP 0.3 currently applies only to rotorcraft operations. The FAA will assess the navigational system for powered-lift to determine if they will be allowed to use this NavSpec. The NavSpec will be amended as required following these determinations.

---

[382] E.g., AC 90-80C Approval of Offshore Standard Approach Procedures, Airborne Radar Approaches, and Helicopter En Route Descent Areas; AC 90-101A - Approval Guidance for Required Navigation Performance (RNP) Procedures with Authorization Required (AR); AC 90-105A - Approval Guidance for RNP Operations and Barometric Vertical Navigation in the U.S. National Airspace System and in Oceanic and Remote Continental Airspace; and AC 90-119 Performance Based Navigation Operations.

D. Part 135 Rules for Powered-Lift

The FAA expects there will be a demand to use powered-lift in commercial operations requiring a part 119 certificate. Therefore, to safely integrate these aircraft into part 135 operations, the FAA completed a review of the current part 135 regulations to determine any necessary additional applicability to powered-lift.

Part 135 applies to two kinds of operations: on-demand and commuter. These operations are defined in § 110.2. On-demand operations are those either conducted as a public charter under part 380 or any operations in which the departure time and location and arrival location are specifically negotiated with the customer and are: in rotorcraft; common carriage operations with airplanes (including turbojet-powered airplanes) that have a passenger-seat configuration of 30 seats or fewer and a payload capacity of 7,500 pounds or less; or noncommon or private carriage operations conducted with airplanes having a passenger-seat configuration of less than 20 seats and a payload capacity of less than 6,000 pounds.

On-demand operations also include scheduled passenger-carrying operations that consist of less than five round-trips per week on at least one route between two or more points according to its published flight schedules in airplanes (other than turbojet-powered airplanes) that have a maximum passenger-seat configuration of 9 seats or less and a maximum payload capacity of 7,500 pounds or less, or in any rotorcraft. Finally, on-demand operations also include all-cargo operations conducted with airplanes having a payload capacity of 7,500 pounds or less, or with rotorcraft.

Commuter operations are scheduled operations conducted by any person operating airplanes (other than turbojet-powered airplanes) that have a maximum passenger-seat configuration of 9 seats or less and a maximum payload capacity of 7,500 pounds or less, as well as all rotorcraft, when such operations conduct at least five round trips per week on at least one route between two or more points according to its published

flight schedules. As described in Section III. of this preamble, the Update to Air Carrier Definitions NPRM proposes to revise the definitions of commuter and on-demand to add powered-lift to part 110 so that operations can be conducted with those aircraft under part 135.

Part 135 includes references to airplanes, helicopters, rotorcraft, and powered-lift; however, part 135 only references powered-lift once. That reference is in the flight experience requirements of § 135.4. Although the term powered-lift was introduced when § 135.4 was added to part 135, it was not necessary to review and revise any other sections of part 135 to incorporate powered-lift because powered-lift were not available for civil operations at that time.

As previously stated in section VI.A, all regulatory requirements imposed on "aircraft" apply to powered-lift. Accordingly, any portions of part 135 which are silent to aircraft category are applicable to all part 135 operations conducted with powered-lift. Part 135 training and qualification requirements for pilots of powered-lift are discussed in section V.G of this preamble.

1. Part 135 Helicopter Rules addressed in this SFAR

The FAA analyzed the part 135 regulations and identified helicopter rules that it determined should apply to powered-lift, either because the rules are more conservative or appropriate considering the VTOL capabilities of powered-lift. The FAA considered the similarities between helicopter and powered-lift in areas such as performance characteristics, vertical take-off and landing capabilities, maneuverability, range and operating environment. The FAA also considered those part 135 operations for which powered-lift could be used in lieu of a helicopter due to the capabilities of powered-lift such as those pertaining to air ambulance operations and off-shore passenger carrying operations that are currently unique to helicopters.

i. Subpart B: Flight Operations

Section 135.117(a) requires each PIC of an aircraft carrying passengers to ensure that passengers have been orally briefed on certain specific items. Specifically, § 135.117(a)(6) requires that, for flights involving extended overwater operations, passengers must be orally briefed on ditching procedures and the use of required flotation equipment. An extended over water operation means, with respect to helicopters, an operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline and more than 50 nautical miles from an off-shore heliport structure.[383] In addition, § 135.117(a)(9) requires that, before each takeoff, the PIC of a rotorcraft that involves flight beyond the autorotational distance from the shoreline ensure that all passengers have been orally briefed on the use of life preservers, ditching procedures, and emergency exit from the rotorcraft in the event of a ditching. This briefing must include the location and use of life rafts and other life preserver devices as applicable.[384]

In the preamble promulgating § 135.117, the FAA explained that the safety equipment requirements for helicopters are different from those of airplanes.[385] This differentiation is made for two reasons. First, helicopters generally operate at lower altitudes than airplanes—usually below 10,000 feet. These lower altitudes reduce the autorotational distance and less time is available to prepare for an unplanned landing due to an unexpected event. Second, airplanes are designed with certain features that can enable them to float for a period of time after ditching such as doors above the waterline and, in some airplanes with pressurized cabins, closeable outflow valve(s). Helicopters do not incorporate these design features and may not be able to float on the surface like an airplane after ditching. Additionally, helicopters, by design, generally have a higher

---

[383] 14 CFR 1.1.

[384] "As applicable" means if the aircraft is carrying rafts or other life preserver devices onboard, passengers must be briefed on the location and use of these items.

[385] Air Ambulance and Commercial Helicopter Operations, Part 91 Helicopter Operations, and Part 135 Aircraft Operations; Safety Initiatives and Miscellaneous Amendments, 75 FR 62639 (Oct. 12, 2010).

center of gravity and, when ditched, can roll over and then rapidly fill with water causing them to sink. Based on these two considerations, helicopter passengers must have additional protections for survival in water if they need to exit the helicopter after ditching as reflected by the requirements in § 135.117(a)(9).[386]

Powered-lift may have a wide variety of design features that may influence buoyancy after ditching and the ability to evacuate in case of an emergency. For example, some aircraft with pressurized cabins are likely to be more buoyant and water resistant than other aircraft without a pressurized cabin. In addition, different aircraft designs, including a lower center of gravity and passenger doors above the waterline, may increase the ability to not take on water and float for a longer period of time. With regard to features that may influence buoyancy and whether the powered-lift will take on water or float for a longer period of time after ditching is unknown. The FAA does not have the historical data on these new aircraft designs to assert that the positive buoyancy characteristics and the potential to float for a longer period of time—characteristics of airplane designs—will exist in powered-lift. Therefore, the FAA proposes to address powered-lift as helicopters for the purpose of over water operations.

Further because some-powered lift may be capable of operations beyond 50 NM of the shoreline or an off-shore heliport structure and are able to conduct takeoff and landing operations similar to helicopters, the FAA proposes to apply to powered-lift, the helicopter-specific definition in § 1.1 of extended over-water operations. This means if a powered-lift conducts an operation beyond 50 NM of the shoreline or an off-shore heliport structure, then it would be conducting an extended overwater operation and would be required to conduct the briefing required by § 135.117(a)(6).

---

[386] If the aircraft is carrying rafts or other life preserver devices onboard, passengers must be briefed on the location and use of these items.

Additionally, the FAA anticipates powered-lift may be designed to auto-rotate or glide to a landing. Accordingly, the FAA proposes in § 194.308(b) to apply the briefing requirement of § 135.117(a)(9) to powered-lift that are conducting operations beyond the auto-rotational distance or gliding distance from the shoreline. This will ensure the use of life preservers, ditching procedures and emergency exits, and if applicable, the location and use of life rafts and other life preserver devices have been briefed if a powered-lift ditches.

ii. Subpart C: Aircraft and Equipment

Section 135.160 requires radio altimeters for all rotorcraft operations conducted under part 135. The FAA determined that radio altimeters are an important safety device designed to inform the pilot of the aircraft's actual height above the surface.[387] Radio altimeters are valuable safety tools. For example, they provide additional situational awareness during an inadvertent encounter with IMC as well as additional situational awareness after encounters with brownout,[388] whiteout,[389] or other situations where vision is suddenly limited, and pilots lose their reference to the horizon and the ground. Additionally, radio altimeters can greatly improve a pilot's awareness of height above the ground during hover, landing in unimproved landing zones, and landings in confined areas where a more vertical approach may be required.[390]

The FAA foresees powered-lift being utilized in similar operational locations to rotorcraft, such as takeoff and landing operations to and from unimproved landing zones, including off-airport operations. This means that these aircraft could encounter many of

---

[387] Helicopter Air Ambulance, Commercial Helicopter, and Part 91 Helicopter Operations, 79 FR 9938 (Feb. 21, 2014).
[388] The Aeronautical Information Manual describes brownout as an in-flight visibility restriction due to dust or sand in the air. In a brownout, the pilot cannot see nearby objects which provide the outside visual references necessary to control the aircraft near the ground.
[389] The Aeronautical Information Manual describes white out as occurring when a person becomes engulfed in a uniformly white glow. The glow is a result of being surrounded by blowing snow, dust, sand, mud or water.
[390] Helicopter Air Ambulance, Commercial Helicopter, and Part 91 Helicopter Operations, 79 FR 9931 (Feb. 21, 2014).

the same hazardous issues, such as flat light,[391] whiteout, and brownout, which helicopters conducting part 135 operations can encounter. In addition, during inadvertent encounters with IMC, a radio altimeter can also provide additional situational awareness to the pilot. In order to establish a level of safety comparable to current rotorcraft operations under part 135, the FAA proposes in § 194.308(c) to require persons operating powered-lift to comply with the radio altimeter requirements of § 135.160.[392] As permitted for rotorcraft that must comply with § 135.160(a), the FAA also proposes to allow persons operating powered-lift with a maximum takeoff weight no greater than 2,950 pounds, the ability to apply for a deviation from the radio altimeter requirements in accordance with § 135.160(b).

Section 135.163 outlines the equipment requirements for all aircraft carrying passengers under IFR. The intent of § 135.163(g) is to ensure an adequate level of safety for multi-engine aircraft carrying passengers under IFR in the event that an engine fails resulting in an accompanying loss of electrical generation on that engine. By requiring the second power source to be on a separate engine, an engine failure during IMC does not become a compound emergency of engine failure and electrical failure simultaneously. Section 135.163(g) contains an exception for multi-engine helicopters that states the two required generators may be mounted on the main rotor drive train and a loss of one powerplant will not affect both generators since they are on a common drive train. Section 135.163 currently applies to powered-lift as written. The FAA proposes in § 194.308(d) to allow powered-lift to utilize the exception for helicopters contained in §135.163(g) when that powered-lift is equipped with a rotor system drivetrain that is driven by two separate powerplants and able to run the two required generators because, just as for rotorcraft, the loss of one powerplant would not affect both generators.

---

[391] The Aeronautical Information Manual describes Flat Light as an optical illusion that causes pilots to lose their depth of field and contrast in vision

[392] A-02-35 NTSB recommendation to incorporate radio altimeters for passenger carrying operations.

Part 135 contains requirements for emergency equipment for both extended overwater and rotorcraft overwater operations. Specifically, § 135.167 details the requirements for all aircraft conducting extended overwater operations, and § 135.168 details the requirements for rotorcraft overwater operations. Section 135.167 requires life preservers be easily accessible to each seated occupant in an aircraft, subject to a limited exception during an air ambulance operation. Section 135.168 requires life preservers be worn by occupants in rotorcraft in overwater operations. In § 135.167, an emergency locator transmitter (ELT) must be attached to a required life raft, while § 135.168 requires the aircraft to carry an approved and installed ELT because there is no requirement to carry a life raft.

Airplanes are designed with certain features that enable them to float for a period of time after ditching, such as doors above the waterline, partially empty fuel tanks, and in some airplanes, pressurized cabins with closeable outflow valves. Due to powered-lift being a new entrant into the civilian marketplace, the FAA does not have the historical data to assert that these positive buoyancy characteristics of airplanes will exist in powered-lift. Accordingly, the FAA proposes to apply § 194.308(e) to §135.168 (that pertains to rotorcraft) to powered-lift. If the powered-lift is operating overwater beyond the gliding or autorotational distance of the shoreline then life preservers must be provided and worn by each occupant.

In developing this proposal, the FAA considered the 2010 notice of proposed rulemaking (NPRM),[393] which proposed the requirement for helicopters operated beyond the autorotational distance from shore to be equipped with electronically deployable or externally mounted life rafts. In the 2014 final rule,[394] the FAA removed that proposed

---

[393] Air Ambulance and Commercial Helicopter Operations, Part 91 Helicopter Operations, and Part 135 Aircraft Operations; Safety Initiatives and Miscellaneous Amendments, 75 FR 62639 (Oct. 12, 2010).
[394] Helicopter Air Ambulance, Commercial Helicopter, and Part 91 Helicopter Operations, 79 FR 9931 (Feb. 21, 2014).

life raft requirement, reasoning that the cost of equipping helicopters with life rafts would not be justified by an increase in the survivability of accidents. The FAA stated that there are relatively few accidents beyond autorotational distance from the shoreline. Among the accidents identified, few qualify as survivable, and of the survivable accidents, the requirement to wear life preservers would generate the greatest likelihood of surviving in the water.[395]

The FAA anticipates powered-lift operated overwater will have a survivability sequence (sequence of events which occur upon impact with the water) more similar to rotorcraft than airplanes and that the donning of life preservers would provide for the greatest likelihood of surviving in the water versus requiring the carriage of a life raft whenever powered-lift are conducting overwater operations beyond gliding and/or autorotational distance from the shoreline. Additionally, the ELT requirements of § 135.168 are appropriate for powered-lift because there is no life raft requirement except during extended overwater operations. This will ensure that all powered-lift that conduct operations beyond the gliding distance or the autorotational distance from the shoreline will have the added safety benefit of rescue locating by the signaling device.

Section 135.181 details performance requirements for all aircraft operated over-the-top[396] or in IFR conditions. This section also contains a provision, in § 135.181(b), that is specific to multiengine helicopters carrying passengers in the offshore environment and that allows these helicopters to conduct certain operations over-the-top or in IFR conditions. The FAA asserted that the provision contained in § 135.181(b) was in the public interest to allow this specific performance requirement for multiengine helicopters conducting passenger carrying operations offshore as such operations support exploration and development of energy supplies, and provided economic relief to those

---

[395] Id. at 9973.
[396] Over-the-top means above the layer of clouds or other obscuring phenomena forming the ceiling.

operators by allowing better utilization of the existing fleet without compromising safety.[397] The FAA anticipates that powered-lift could also be used in conducting offshore passenger operations that are currently provided by multiengine helicopters. The FAA notes that all powered-lift with the possibility of being operated in civil operations will be multi-engine; accordingly, the FAA proposes in § 194.308(f) to apply § 135.181(b) to all powered-lift. The FAA anticipates a powered-lift that is able to meet the performance requirements of §135.181(b) would be providing the same level of safety established for helicopters using the same rationale that helicopters were afforded with this exception when operating in the offshore environment. This exception would provide the same economic relief to powered-lift operators as that experienced by helicopter operators.

Section 135.183 provides the performance requirements for land aircraft to operate over water. The basic premise for this regulation is that a land aircraft must be operated in such a way as to keep the aircraft out of the water. Paragraph (a) requires that any aircraft operate at an altitude that allows it to reach land in the event of an engine failure. Paragraph (b) allows overwater operations strictly limited to only takeoff and landing operations. Paragraph (c) requires a multiengine aircraft to be able to climb with its critical engine inoperative at least 50 feet a minute at 1000 feet above the surface. Paragraph (d) allows helicopters the option of installing floats if they are unable to meet the requirements of paragraph (a) or (c). With the exception of paragraph (d), powered-lift operations over water must comply with the provisions of § 135.183, because it references aircraft. In 1973, the FAA added paragraph (d) for helicopters equipped with flotation devices.[398] The FAA determined that helicopters could be operated safely beyond land in the case of an engine failure as long as the helicopter was equipped with

---

[397] Rotorcraft Regulatory Review Program Notice No. 5, 50 FR 10165 (Mar. 13, 1985).
[398] Helicopter Use Over Water, 38 FR 12906 (May 17, 1973) (amending § 135.147, which contained the requirements in § 135.183 prior to the recodification in 1978).

flotation devices, even if they did not meet the requirements in paragraph (a) or (c).[399] The FAA anticipates that powered-lift may be utilized in the same fashion as helicopters carrying passengers over water. The FAA is uncertain if powered-lift will be equipped with floats; however, the FAA expects that a powered-lift that is equipped with floatation devices through an FAA certification process will provide the same level of safety that is currently extended to helicopters because the FAA anticipates that a powered-lift with floats would land similarly to a float-equipped helicopter. Accordingly, the FAA proposes in § 194.308(g) to allow powered-lift to utilize the exception contained in paragraph (d) if the powered-lift is unable to meet the requirements of paragraph (a) or (c).

iii. Subpart D: VFR/IFR Operating Limitations and Weather Requirements

Section 135.207, which outlines helicopter surface reference requirements under VFR, was originally promulgated in 1958 and at a time when helicopters were not widely equipped with gyroscopic flight instruments.[400] This rule has remained unchanged throughout the years leaving its application, in this case, to be somewhat inappropriate due to the advances in technology of many aircraft since its inception. Much research has also occurred in the science of human factors associated with flying at night in reference to objects on the surface or on the horizon. This section specifically omitted airplanes at the time of publication because airplanes were more widely equipped with the adequate instrumentation needed to maintain a pilot's situational awareness.[401] The FAA anticipates that powered-lift will be equipped with advanced technologies and flight instrumentation that would provide adequate situational awareness as well as an ability to

---

[399] Id.
[400] Part 46—Scheduled Air Carrier Helicopter Certification and Operation Rules, 23 FR 2265 (Apr. 8, 1958).
[401] Part 46—Scheduled Air Carrier Helicopter Certification and Operation Rules, 23 FR 2264 (Apr. 8, 1958).

maintain positive control of an aircraft in lower light and visibility situations. However, some powered-lift could be manufactured without gyroscopic flight instruments. To ensure the pilot can safely control the aircraft, the FAA proposes in § 194.308(h) that this section only apply to powered-lift that do not have the flight instrumentation listed in § 135.159 installed and operable.

Section 135.227(d) prohibits helicopters from flying under IFR into known or forecast icing conditions or under VFR into known icing conditions unless the helicopter is type certificated and appropriately equipped for operations in icing conditions. A powered-lift should also be prohibited from operating in certain icing conditions unless it is type certificated and appropriately equipped for operations in such conditions. This requirement will ensure those aircraft can safely operate in icing conditions because they are appropriately certificated and equipped with the proper equipment. Section 135.227(c)(2) and (3), which are applicable to airplanes, are similar to § 135.227(d) in that those provisions require the aircraft to meet certain airworthiness standards in order to operate in certain icing conditions. However, § 135.227(d) is appropriate to apply to powered-lift because the airworthiness requirements are less specific, which makes this paragraph more suited to the § 21.17(b) certification process that powered-lift comply with, which is appropriate as the FAA gathers more information about powered-lift operations in icing conditions. Therefore, the FAA proposes in § 194.308(i) to apply § 135.227(d) to powered-lift that are type certificated and appropriately equipped for operations in icing conditions. Operations in icing conditions are discussed more extensively in VI.D.2.v regarding airplane rules and weather requirements.

Section 135.229 provides the airport requirements that apply to all aircraft with the exception of paragraph (b)(2)(ii) in which helicopters are also allowed to use

reflective material.[402] The landing lights on helicopters are generally oriented so that they shine at an angle approximate to a normal approach angle used by helicopters. This negates the need for the landing area to be lit up with runway lights and permits the helicopter pilot to easily pick out and maintain a safe approach angle to an area marked by reflective material. The FAA expects that, since powered-lift are capable of a vertical takeoff or landing, they could be equipped with landing lights oriented in a direction that enables the pilot to see a landing area marked by reflective material. Accordingly, the FAA determined that for powered-lift that are conducting a vertical takeoff or landing and that are equipped with landing lights oriented in a direction that enables the pilot to see the takeoff or landing area marked by reflective material, then powered-lift may use that reflective material that a helicopter is permitted by § 135.229(b)(2)(ii). If conducting a takeoff or landing roll using wing-born lift, a powered-lift must takeoff or land at an airport with boundary or runway marker lights, as set forth in § 135.229(b)(2)(i). The FAA proposes in § 194.308(j) to allow powered-lift to takeoff from or land at an airport that uses reflective material when conducting a takeoff or landing in the vertical-lift flight mode and is equipped with landing lights oriented in a direction that enables the pilot to see the takeoff or landing area marked by reflective material.

iv. Subpart F: Crewmember Flight Time and Duty Period Limitations and Rest Requirements

Subpart F details crewmember flight time, duty period limitations, and rest requirements. These sections are applicable to scheduled and unscheduled operations regardless of the type of aircraft with the exception of § 135.271, Helicopter Hospital Emergency Medical Evacuation Services (HEMES). The FAA has noted previously that

[402] Miscellaneous Amendments, 29 FR 2988 (Mar. 5, 1964).

it uses the terms helicopter air ambulance (HAA) and HEMES interchangeably.[403] Section 135.271 requires different rest and duty requirements for HAA operations conducted from a hospital, and in order to assure that a helicopter pilot is adequately rested, there is a requirement to have an approved place of rest at or in close proximity to the hospital where the helicopter is based. The FAA stated in the NPRM for § 135.271 that air ambulance operations are of undoubted social benefit and proven safety, and that the FAA has been issuing exemptions for these operations for several years and is satisfied that they are safe.[404]

Since powered-lift are able to conduct vertical takeoffs and landings, they could be based at a hospital heliport. Therefore, the FAA anticipates powered-lift operators will be able to conduct HAA operations that are subject to the requirements of § 135.271. Operators that have a powered-lift based at a hospital should be allowed to use the rest and duty rules permitted by this section, just as current helicopter operators are permitted. The FAA applies this provision to all HAA instead of using the term HEMES for maximum clarity going forward with respect to which operations these limitations are applicable to. This determination is consistent with the preamble accompanying implementation of this provision, which indicates it was intended to apply to all HAA.[405] Therefore, the FAA proposes in § 194.308(k) that § 135.271 apply to powered-lift conducting HAA operations in accordance with subpart L of part 135.

---

[403] National Policy regarding Helicopter Air Ambulance Operations, available at https://www.faa.gov/documentLibrary/media/Notice/N_8900.509.pdf.
[404] Flight Time Limitations and Rest Requirements for Flight Crewmembers, 49 FR 12136, 12141 (Mar. 28, 1984).
[405] See, e.g., Helicopter Air AMBULANCE, commercial Helicopter, and Part 91 Helicopter Operations, 79 FR 9944 (Feb. 21, 2014), which states: "As established by this rule, all helicopter air ambulance operations with medical personnel or patients on board must be conducted under part 135. The provisions of §§ 135.267 and 135.271 would therefore apply to the helicopter air ambulance operations previously conducted under part 91".

v. Subpart J: Maintenance, Preventative Maintenance, and Alterations

Section 135.429 applies to all aircraft, except for paragraph (d) which states that the FAA may approve procedures for the performance of required inspection items by a pilot of a rotorcraft that operates in remote areas or sites. The pilot may perform the inspection items, with certain limitations, when no other qualified personnel are available and a mechanical interruption occurs. The FAA expects a pilot who is trained under the requirements of §135.429(d) would provide the same level of competency as a certificated mechanic.[406] The rule is intended to allow a certificate holder the opportunity to establish a preventive maintenance process for when a mechanical interruption occurs in a remote area or site. The inspection must be accomplished under the direct control of the certificate holder's maintenance program. Because powered-lift may take off and land like a rotorcraft, some powered-lift may operate in remote areas or sites. Consequently powered-lift used in such operations experience the same challenges that exist for rotorcraft when an unscheduled mechanical interruption occurs. Therefore, the FAA proposes in § 194.308(l) to apply § 135.429(d) to powered-lift that operate in remote areas or sites.

vi. Subpart L: Helicopter Air Ambulance Equipment, Operations, and Training Requirements

Helicopter air ambulance operations must comply with subpart L of part 135 in addition to other requirements of this part. Since subpart L became effective, significant decreases in HAA fatalities have occurred, further justifying the positive impact on the safety benefit of these requirements. Since powered-lift can operate similar to a helicopter during the critical phases of flight of takeoff and landing, and to ensure the

[406] See Rotorcraft Regulatory Review Program Amendment No. 5; Operations and Maintenance; Final Rule, 51 FR 40692 (Nov. 7, 1986).

higher level of safety that is afforded to medical personnel aboard those aircraft, the FAA proposes powered-lift conducting air ambulance operations will be required to comply with subpart L. Moreover, § 135.1 outlines the applicability of part 135, and § 135.1(a)(9) lists HAA operations as defined in § 135.601(b)(1). Because the FAA proposes that subpart L apply to powered-lift, it also proposes in § 194.308(a) that § 135.1(a)(9) apply to powered-lift conducting air ambulance operations.

The FAA anticipates that operators utilizing powered-lift for air ambulance activities will present a new dynamic because these aircraft can be operated like an airplane and a helicopter. The FAA currently differentiates between airplane air ambulance operations and HAA operations including the required equipment, weather minimums, required risk analysis, flight monitoring, and the authorizing document issued to the operator.[407] As provided in the preamble to the final rule implementing subpart L, helicopter air ambulance operations are conducted under unique conditions.[408] Such flights are often time sensitive and operate at low altitudes and under varied weather conditions. They must often land at unfamiliar, remote, or unimproved sites with hazards like trees, buildings, towers, wires, and uneven terrain. Patients being transported often do not have a choice between operator or mode of transportation. For these reasons, the FAA established more stringent safety regulations applicable to HAA operations which include weather minimums and visibility requirements, as well as mandating flight planning, preflight risk analyses, safety briefings for medical personnel, and the establishment of operations control centers (OCC) for certain operators to help with risk management and flight monitoring. The rule also includes provisions to encourage instrument flight rules (IFR) operations. It requires helicopter air ambulances to be

---

[407] Air ambulance operations conducted in an airplane are approved through issuance of Operations Specification A024, while air ambulance conducted in a helicopter are approved through issuance of A021. When the type of operation is proposed in powered-lift, the FAA will issue the appropriate operations specification.

[408] Helicopter Air Ambulance, Commercial Helicopter, and Part 91 Helicopter Operations, 79 FR 9931 (Feb. 21, 2014).

equipped with both helicopter terrain awareness and warning systems (HTAWS) (the HTAWS will warn pilots about obstacles in their flight path), and flight data monitoring systems. Finally, helicopter air ambulance pilots are required to hold instrument ratings.[409]

The FAA anticipates that powered-lift be used in air ambulance operations would likely complete operations similar to those currently conducted by helicopters and thus also be likely to encounter circumstances similar to helicopters in air ambulance operations. Powered-lift conducting air ambulance operations should be afforded the same level of safety as HAA operations, and the rules contained in subpart L will provide this level of safety. Accordingly, the FAA proposes in § 194.308(m) that the applicability and definitions section of subpart L also apply to powered-lift.

The FAA conducted an analysis of the sections in subpart L versus those contained throughout subparts A through J to determine if any changes in subpart L were required for continuity with the proposed powered-lift SFAR, and to ensure there was no conflict in applying these rules when air ambulance operations are conducted in a powered-lift. This analysis and applicability of subpart L are described in the following paragraphs.

Section 135.154 requires terrain awareness and warning systems (TAWS) in airplanes with a passenger seat configuration of 6 to 9 passengers, while § 135.605 requires helicopter terrain awareness and warning system (HTAWS) equipment for all helicopters used in HAA operations, regardless of passenger seat configuration. This difference in requirements is based upon the different flight characteristics and the operating environment in which these aircraft operate, such as speed, maneuverability, and the altitudes at which they normally operate.

---

[409] Helicopter Air Ambulance, Commercial Helicopter, and Part 91 Helicopter Operations, 79 FR 9931 (Feb. 21, 2014).

As previously discussed, powered-lift are capable of flight similar to both airplanes and helicopters. Consequently, individually the current TAWS and HTAWS are not a complete solution for powered-lift due to each equipment's capabilities and limitations. In the subsequent preamble discussion regarding the applicability of TAWS to airplanes, the FAA explains its determination that HTAWs or an FAA approved TAWS A/HTAWS hybrid system rather than an airplane-specific TAWS, is appropriate for powered-lift having a passenger seating configuration, excluding any pilot seat, of 6 or more. See proposed § 194.307(q). Consistent with proposed § 194.307(q), for powered-lift operating under subpart L, the FAA is proposing to allow a hybrid system in a powered-lift that utilizes the features of a TAWS A system for wing-borne flight and HTAWS for vertical flight modes of operation for compliance with §135.605. Without a TAWS A/HTAWS hybrid system, the FAA determined that the current HTAWS specification would provide the best level of safety without an undue number of nuisance warnings. The FAA proposes in § 194.308(o) that any powered-lift that is used in air ambulance operations as defined § 135.601, modified by the proposed SFAR, be equipped with HTAWS, unless equipped with an FAA approved TAWS A/HTAWS hybrid system, in accordance with § 135.605.

Section 135.603 requires the PIC of a helicopter air ambulance operation to meet the requirements of § 135.243 and to hold either a helicopter instrument rating or an ATP certificate with a category and class rating for that aircraft, not limited to VFR. It is equally important for PICs of powered-lift air ambulance operations to meet the requirements set forth in this section. In the NPRM implementing updated requirements for helicopter air ambulance operations, the FAA explained that inadvertent flight into IMC is a common factor in helicopter air ambulance accidents. In general, many accidents result when pilots who lack the necessary skills or equipment to fly in marginal VMC or IMC attempt flight without outside references. The proposal was intended to

ensure that helicopter air ambulance pilots are equipped to handle these situations and extract themselves from these dangerous situations. A pilot who receives the more extensive training on navigating a helicopter solely by reference to instruments provided by obtaining an instrument rating is better able to maintain situational awareness and maneuver the helicopter into a safe environment than a pilot without an instrument rating.[410]

These concerns regarding inadvertent flight into IMC would be equally applicable for PICs of powered-lift. Accordingly, the FAA proposes in § 194.308(n) that these requirements also apply for powered-lift operations occurring under subpart L. For further discussion of proposed amendments to § 135.243, please see section I.5.i. of this preamble.

The FAA also determined that it would be appropriate to apply the requirement set forth in § 135.607 for a helicopter to have for flight data monitoring system capable of recording flight performance data to powered-lift conducting air ambulance operations. The FAA has not identified any reason to differentiate between helicopters and powered-lift conducting air ambulance operations for purposes of compliance with this requirement, as it would be equally important for powered-lift to record flight performance data in the dynamic environment contemplated by subpart L. Accordingly, the FAA proposes this requirement be applicable to powered-lift in §194.308(p).

Section 135.609(a) specifies the minimum ceiling and visibility requirements for conducting VFR helicopter air ambulance operations in Class G airspace. Those requirements are broken down into day or night, mountainous or non-mountainous, and local or non-local flying areas. Section 135.601(b)(3) defines mountainous areas as those designated under part 95 of chapter I. Part 95 contains maps and the latitude and

---

[410] Air Ambulance and Commercial Helicopter Operations, Part 91 Helicopter Operations, and Part 135 Aircraft Operations; Safety Initiatives and Miscellaneous Amendments, 75 FR 62639 (October 12, 2010).

longitude coordinates depicting the mountainous areas of the eastern and western United States as well as Alaska, Hawaii, and Puerto Rico. Section 135.601(b)(4) defines non-mountainous areas as areas other than the mountainous areas listed in part 95. In addition, § 135.609(b) explains that a certificate holder may designate local flying areas in a manner acceptable to the Administrator that must 1) not exceed 50 NM in any direction from each designated location; 2) take into account obstacles and terrain features that are easily identifiable by the pilot in command (PIC) and from which the PIC may visually determine a position; and 3) take into account the operating environment and capabilities of the certificate holder's helicopters.

The FAA established the minimums under § 135.609(a), which are more stringent than the VFR visibility requirements of § 135.205 for helicopters, because the FAA believed that all flight operations conducted under VFR in helicopter air ambulance operations should comply with more stringent weather requirements. They also asserted these ceiling and visibility requirements would be an effective method of increasing safety in helicopter air ambulance operations.[411] For powered-lift, the FAA evaluated the VFR minimum altitudes, required visibility, and distance from cloud requirements for airplanes as contained in §§ 135.203 (VFR minimum altitudes), 135.205 (VFR visibility requirements), and 91.155 (distance from cloud requirements) and applied these airplane minimums to the table contained in § 135.609(a) which resulted in minimums that are most closely aligned with the FAA's intent of applying the ceiling and visibility requirements of airplanes to powered-lift.

A powered-lift may takeoff and land vertically and can therefore access the same locations that a HAA aircraft can, thus making it suitable to conduct these kinds of operations; however, the powered-lift can be much different than a helicopter in cruise

---

[411] Air Ambulance and Commercial Helicopter Operations, Part 91 Helicopter Operations, and Part 135 Aircraft Operations; Safety Initiatives and Miscellaneous Amendments, NPRM, 75 FR 62649 (Oct. 12, 2010).

flight, where the powered-lift—during wing-born flight mode—is anticipated to operate more like an airplane. These operating differences include higher airspeeds, which require more distance to see and avoid obstacles and terrain, and more airspace to conduct maneuvering. Speed and maneuverability also play a role in the ability of a powered-lift operating with a cloud layer to avoid objects, including other aircraft, that come out of the clouds. Additionally, these characteristics may limit the ability of a powered-lift to conduct an emergency landing into the same areas a helicopter might use. This can be predicated on the time it takes the powered-lift to transition to VTOL or even its inability to use VTOL with certain failures, causing it to operate more like an airplane in this respect.

As a result of the foregoing, the FAA determined powered-lift should be operated at a higher minimum when operating at night than what is currently required under § 135.609 for helicopters. The proposed requirements for powered-lift are identical to the helicopter requirements in the § 135.609(a) table for daytime operations, but the ceiling increases for nighttime operations to help create a safer operating environment for powered-lift. Finally, the FAA notes that the table in § 135.609(a) contains two columns for night operations: one column for "night" operations and another column for "night using an approved NVIS or HTAWS" operations. Because HTAWS are now required, the "night" column requirements are no longer relevant and have been phased out. The FAA proposes in §194.308(q) that powered-lift comply with the minimum ceiling and visibility requirements for VFR air ambulance operations in Class G airspace as described in the following table (Table 10):

Table 10: Proposed VFR Air Ambulance Minimums in Class G Airspace

Location	**Day**		**Night**	
	Ceiling	Visibility	Ceiling	Visibility
Non-mountainous Local Flying Areas	800 FT	2 SM	1500 FT	3 SM

Non-mountainous Non-Local Flying Areas	800 FT	3 SM	1500 FT	3 SM
Mountainous Local Flying Areas	800 FT	3 SM	2500 FT	3 SM
Mountainous Non-Local Flying Areas	1000 FT	3 SM	2500 FT	5 SM

In addition, the FAA proposes § 135.609(b) apply to certificate holders operating powered-lift in air ambulance operations so that they may designate local flying areas that meet the requirements of paragraphs (b)(1) through (3). Weather minimums are less stringent in local flying areas because of pilots' increased familiarity with obstacles and the operating environment.[412] The FAA expects that powered-lift pilots conducting air ambulance operations will have the same familiarity with local obstacles and the operating environment.

Section 135.611 sets forth requirements for HAA IFR operations at locations without weather reporting. The FAA evaluated the provisions of this section and determined that it would be appropriate to provide the ability for authorization for IFR operations of powered-lift at airports with an instrument approach procedure and where a weather report is not available. This provision would only be able to be utilized by powered-lift operating under subpart L that are certified for IFR operations and that receive an additional authorization from the Administrator. The FAA proposes the applicability of this section in § 194.308(r).

Section 135.613 details the ceiling and visibility requirements for approach and departure IFR transitions for HAA operations. This rule was codified to establish weather minimums for HAA that are using an instrument approach and are now transitioning to visual flight for landing. It also permits VFR to IFR transitions for departures if the pilot has filed an IFR flight plan and will obtain an IFR clearance within 3 NM of the

[412] Helicopter Air Ambulance, Commercial Helicopter, and Part 91 Helicopter Operations, 79 FR 9931 (Feb. 21, 2014).

departure location and the pilot departs following an FAA-approved obstacle departure procedure. This section is intended to encourage IFR operations because of the safety benefits associated with flights conducted under IFR. Section 135.613(a) establishes the requirements when conducting an authorized instrument approach and transitioning from IFR to VFR flight.

Section 135.613(a)(1) requires a flight visibility of 1 statute mile (SM) and a ceiling based upon the minimums published on the approach chart. This is applicable for Point-in-Space (PinS) Copter Instrument approaches that are annotated with a "Proceed VFR" segment, and the distance from the missed approach point to the landing area is 1 NM or less. The FAA proposes in § 194.308(s)(1) that § 135.613(a)(1) only apply to powered-lift that are equipped and certified to conduct these PinS approaches.

Section 135.613(a)(2) specifies the minimum ceiling and visibility requirements for all instrument approaches if the missed approach point to the landing area is 3 NM or less. These minimum ceiling and visibility requirements are also applicable to PinS approaches which contain a "Proceed VFR" segment where the missed approach point to the landing area is greater than 1 NM but no greater than 3 NM. The FAA noted in the Helicopter Air Ambulance, Commercial Helicopter, and Part 91 Helicopter Operations final rule that in most cases the rule permits flight under less restrictive weather minimums than are currently allowed for cruise flight in uncontrolled airspace.[413] The ceiling requirement of § 135.613(a)(2) is less restrictive than that required by § 135.609(a), and the visibility requirement is generally less restrictive than § 135.609(a) as well. In the Helicopter Air Ambulance final rule, when discussing permitting less restrictive ceilings and visibilities, the FAA stated that obstacles in the vicinity of an instrument approach are flight-checked and marked on instrument approach charts. It is

[413] Helicopter Air Ambulance, Commercial Helicopter, and Part 91 Helicopter Operations, Final Rule, 79 FR 9946 (Feb. 21, 2014).

less likely that pilots would encounter unexpected obstacles when following an instrument approach chart.[414]

The minimums currently prescribed for helicopters in § 135.613(a)(2)(i) and (ii) would not allow a powered-lift to maintain an acceptable level of obstacle and cloud clearances when conducting VFR transitions to landing areas because of the anticipated time it will take to transition from cruise flight to VTOL landing, as well as speed, distance required to maneuver, and autopilot usage. Airplanes are not able to use reduced VFR weather minimums when conducting these types of maneuvers and applying these minimums is consistent with the FAA's previous determination to require powered-lift to use airplane weather minimums under part 91 as previously discussed in this NPRM. Therefore, the FAA proposes in § 194.308(s)(2) that a 1000-foot ceiling and 2 SM visibility for powered-lift day operations and a 1500-foot ceiling and 3 SM visibility for powered-lift night operations.

Section 135.613(b) addresses the departure minimums required for transitions from VFR to IFR. Since the FAA proposes that powered-lift will be required to use alternate powered-lift minimums for § 135.613(a), the FAA proposes in § 194.308(s)(3) powered-lift use those same minimums for § 135.613(b)(1) as well.

Section 135.615(a) requires helicopter air ambulance pilots to perform pre-flight planning to determine the minimum safe cruise altitude and to identify and document the highest obstacle along the planned en route phase of flight prior to conducting VFR operations. The pilot would use this minimum safe cruise altitude when determining the minimum required ceiling and visibility for the planned flight. This rule is intended to

[414] Id.

prevent obstacle collisions by requiring pilots to be aware of the terrain and highest obstacles along a planned route.[415]

The FAA anticipates many powered-lift, other than necessary for takeoff and landing, in order to gain efficiencies in speed and range, will prefer to utilize wing-borne flight as long as practical. Since powered-lift will likely operate similar to an airplane in cruise flight, they will require more time and distance to make corrections to their flightpath to avoid other aircraft and obstacles. As a result, the FAA analyzed whether applying the minimums under § 135.203(a) would be more appropriate for powered-lift conducting HAA operations than the minimums outlined under § 135.615. Section 135.203(a) specifies the VFR minimum altitudes for airplane operations. Specifically, § 135.203(a)(1) requires an airplane be operated during the day, at least 500 feet above the surface or no less than 500 feet horizontally from any obstacle. Additionally, § 135.203(a)(2) requires an airplane be operated at night at an altitude at least 1,000 feet above the highest obstacle within a horizontal distance of 5 miles from the course intended to be flown or, in designated mountainous terrain, at least 2,000 feet above the highest obstacle within a horizontal distance of 5 miles from the course intended to be flown. The FAA considered the similarities between airplanes and powered-lift using wing-borne lift during the cruise portions of flight and asserts that the airplane requirements contained in § 135.203(a)(1) and (2) are more suited for powered-lift than the helicopter minimums in § 135.203(b). Accordingly, the FAA proposes minimums for powered-lift operating under subpart L in § 194.308(t)(1).

Whereas § 135.203(b) requires no minimum VFR altitude for helicopters, except over congested areas where 300 feet above the surface is required, helicopters used in air ambulance operations are required to maintain higher minimum VFR altitudes as

---

[415]Air Ambulance and Commercial Helicopter Operations, Part 91 Helicopter Operations, and Part 135 Aircraft Operations, Safety Initiatives and Miscellaneous Amendments, 75 FR 62640, 62651 (Oct. 12, 2010).

stipulated in § 135.615(b)(1) and (2). Section 135.615(b)(1) and (2) require the pilot in command of a helicopter to ensure all terrain and obstacles along the route of flight are cleared vertically by no less than 300 feet during the day and 500 feet at night when conducting a VFR air ambulance operation.

A minimum altitude that clears all terrain and obstacles along the route of flight vertically by no less than the 500 feet during the day, and at night 1,000 feet, except in mountainous terrain where 2,000 feet will provide a sufficient distance from terrain and obstacles to ensure the safe operation of powered-lift conducting air ambulance operations. The FAA proposes in § 194.308(t)(2) that to comply with the en route altitude requirements of § 135.615(b)(1) and (2), a powered-lift conducting a VFR air ambulance operation clear all terrain and obstacles along the route of flight vertically by the minimum altitudes and horizontal distances specified in § 135.203(a)(1) and (2). Similarly, the FAA proposes the pilot in command of a powered-lift use the minimum altitudes specified in § 135.203(a)(1) and (2) when making the determinations required by § 135.615(a)(3).

The FAA also proposes in § 194.308(u) that the pre-flight risk analysis requirements contained in § 135.617 apply to powered-lift. This section details several items that must be documented in the certificate holder's manual regarding pre-flight considerations, such as human factors, weathers, and other critical considerations. The FAA imposed these requirements for HAA because "the FAA and the NTSB…identified several accidents which may have been prevented had a preflight risk analysis been completed. The NTSB concluded that "implementation of flight risk evaluation before each mission would enhance the safety of emergency medical services operations."[416]

---

[416] Helicopter Air Ambulance, Commercial Helicopter, and Part 91 Helicopter Operations, Final Rule, 79 FR 9946 (Feb. 21, 2014), citing NTSB, *Special Investigation Report on Emergency Medical Services Operations* (NTSB/SIR-06/01) 4 (Jan. 25, 2006).

The considerations that a certificate holder is required to take into account for helicopter operations are equally important for operations of powered-lift under subpart L.

Section 135.619 sets out the requirements for an operations control center. This regulation requires a certificate holder who is authorized to conduct HAA with 10 or more helicopter air ambulances assigned to the certificate holder's operations specifications to have an operations control center. The FAA added the requirement for operations control centers with the initial codification of Subpart L, stating the level of operational complexity and management detail required for safe operations is greater for certificate holders with 10 or more helicopter air ambulances.[417] The FAA determined that operational complexity and management detail required for safe operations in the dynamic environment envisaged by the air ambulance operations conducted under Subpart L is not limited to only helicopters, but rather is dependent on the number of aircraft authorized. Therefore, the FAA proposes in § 194.308(v) that any operator utilizing helicopters, powered-lift, or any combination thereof, that total 10 or more of these aircraft utilized in air ambulance operations would trigger the requirements to have an operations control center as detailed in § 135.619.

The FAA also determined, as proposed in § 194.308(w), that it would be appropriate to apply the briefing requirements contained in § 135.621 for medical personnel to air ambulance operations that occur in powered-lift. The FAA determined that it would not be appropriate to relieve powered-lift operators from the briefing requirements for medical personnel currently required for helicopter operators, as powered-lift will be operating in the dynamic requirement envisaged by subpart L.

2. Part 135 Airplane Rules addressed in this SFAR

The FAA analyzed the part 135 regulations and identified airplane rules appropriate to powered-lift operations. The FAA based this determination on the ability

[417] Id. at 62647.

of a powered-lift to operate in a manner similar to airplanes. Additionally, the FAA considered the safety aspects of the rule, whether or not powered-lift have similar operating and performance characteristics to airplanes, such as wing-borne flight, higher cruise speeds and operational altitudes. The FAA also considered the similarities between airplanes and powered-lift in areas such as takeoff and landing capabilities using wing-borne lift, maneuverability, range and operating environment. In light of the proposed changes to air carrier definitions in the Update to Air Carrier Definitions NPRM, which will affect the applicability of this part, the FAA assumes, in this rule, that all part 135 requirements applicable to aircraft, generally, apply to powered-lift.

i. Subpart A: General

Subpart A prescribes requirements regarding the applicability, manual requirements, aircraft requirements, and crewmember certificate requirements for part 135. For those operators required to have a manual, § 135.23 specifies the required content for that manual. It is essential for certificate holders of a certain size to have a manual which sets forth their procedures and policies to ensure the safe operation of the aircraft they use. The manual content requirements of a Destination Airport Analysis as specified in § 135.23(r) are only required if the aircraft meets the thresholds set forth by § 135.385, Large Transport Category Airplanes: Turbine Engine Powered: Landing limitations: Destination Airports, as specified for large powered-lift in § 194.307(qq) and (rr).

The FAA proposes in § 194.307(a) that if the requirements of § 135.385 are applicable to a specific powered-lift, then all of the requirements of § 135.23(r), and in particular, § 135.23(r)(7) which currently only applies to airplanes, would be applicable as well. This proposal will ensure that evaluation of any inoperative equipment are included in the Destination Airport Analysis, which is equally important for powered-lift as it would be for airplanes required to comply with the performance requirements of §

135.385. The FAA expects that powered-lift inoperative equipment would affect the analysis of runway safety margins at destination airports.

ii. Subpart B: Flight Operations

Subpart B prescribes requirements for flight operations under part 135. Section 135.93 details minimum altitudes for use of an autopilot. This section is applicable to all aircraft but contains many references to an Airplane Flight Manual (AFM) in multiple paragraphs and, in paragraph (g) excepts rotorcraft operations. The altitude requirements of this section are in place to provide pilots with sufficient altitude for obstacle clearance taking into consideration the reaction time needed to disengage the autopilot and apply a corrective action should an autopilot malfunction occur.

An example of a particularly critical autopilot malfunction is a hard-over, which is when the autopilot pitch control channel commands a full nose-down deflection of the pitch control surfaces of the airplane. The FAA anticipates that powered-lift will conduct a majority of their autopilot-controlled flight operations much like an airplane (in wing-borne flight mode), with the lift being primarily produced by the wings providing a greater forward velocity than a helicopter. The safety measures of this rule, including any autopilot related limitations contained in the powered-lift's flight manual, and not the rotorcraft exception, should continue to apply to powered-lift to ensure the pilot has sufficient altitude to recognize, react, and recover from an autopilot induced malfunction. As a result, the aircraft-generic autopilot requirements in § 135.93(a) through (f) apply to powered-lift, and the FAA proposes in § 194.307(b) to apply the requirements referencing the "Airplane" flight manual to powered-lift, as reflected in a powered-lift's aircraft flight manual.

Section 135.100 details flightcrew member duties in relation to critical phases of flight including all ground operations involving taxi, takeoff and landing, and all other flight operations conducted below 10,000 feet, except cruise flight. This rule was codified

in 1981 for both parts 121 and 135 operations to improve safety by reducing flightcrew member distractions caused by non-safety related duties and activities being conducted during critical phases of flight.[418] Regardless of the type of aircraft and the type of taxiing they do (i.e., ground taxi, hover taxi), in order to maintain an equivalent level of safety for all aircraft, including powered-lift, conducting operations at an airport, all movement of any aircraft under its own power at an airport must be done free of distraction from non-safety related duties and activities.

In § 135.100, a note states that taxi is defined as "movement of an airplane under its own power on the surface of an airport." FAA ATC defines two means of taxiing for helicopters as hover taxi and air taxi.[419] Upon review of this regulation, the FAA determined that the term taxi should not be limited to airplanes and should be applicable to all aircraft conducting taxi maneuvers at an airport. The note at the time of this rule did not conceptualize helicopters taxiing on wheels on a taxiway as well as a potential for powered-lift that might also be able to taxi in this manner. Powered-lift may have the design and capability to taxi in a manner similar to airplanes, helicopters, or both. The intent of the rule is to provide for a sterile cockpit during critical phases of flight to improve safety by reducing distractions, which is also applicable to powered-lift operations. As a result, the FAA proposes amending the definition as a permanent change in § 135.100 to replace the word "airplane" with "aircraft," making the section applicable to not only airplanes, but also helicopters and powered-lift.

Section 135.128 regulates the use of safety belts and child restraint systems. This section requires that each person onboard an aircraft operated under part 135 occupy an approved seat or berth with a separate safety belt properly secured about him or her during movement on the surface, takeoff, and landing. For seaplane and float equipped

---

[418] Elimination of Duties and Activities of Flight Crewmembers Not Required for the Safe Operation of Aircraft, 46 FR 5502 (Jan. 19, 1981).
[419] FAA Order 7110.65W (Dec. 10, 2015) Chapter 3, Section 11.

rotorcraft operations during movement on the surface, the person pushing off the seaplane or rotorcraft from the dock and the person mooring the seaplane or rotorcraft at the dock are excepted from the seating and safety belt requirements.

In 1992 when the FAA published a final rule[420] that revised § 135.128, it indicated that it agreed with a comment received regarding seaplane operations, in that a pilot would be unable to moor or launch a seaplane or a float equipped rotorcraft, unless a pilot or passenger has their safety belt or shoulder harness unfastened so that they can vacate their seat for the purpose of launching or mooring the seaplane or float equipped rotorcraft. The same exception should also apply to a powered-lift that is properly equipped to conduct operations on water. The FAA proposes in § 194.307(c) to apply the exception delineated in § 135.128(a) to powered-lift pilots or passengers when the powered-lift is operating like a seaplane or a float equipped rotorcraft.

iii. Subpart C: Aircraft and Equipment

Subpart C prescribes requirements for aircraft and associated equipment for operations under part 135. Section 135.145 sets out the parameters and the requirements for the Proving and Validation Tests that must be accomplished by a certificate holder. Proving tests are necessary to evaluate each certificate holder's ability to conduct operations safely and in accordance with the applicable regulations. Proving tests under § 135.145 consist of a demonstration of the certificate holder's ability to operate and maintain certain aircraft new to the operator's fleet or the certificate holder's ability to conduct a particular kind of operation. Additionally, it is each certificate holder's responsibility to show that they can operate each of their aircraft safely and in compliance with the requirements of the regulations and their procedures. Section 135.145(b) requires that a certificate holder conduct proving tests in a turbojet airplane if they have

[420] Miscellaneous Operational Amendments, 57 FR 42662 (Sep. 15, 1992).

not previously proved a turbojet airplane. Powered-lift, regardless of the powerplant, have additional complexity due to their design and operation and that these features have not been available and experienced by the civilian market to date. To ensure powered-lift operate to the highest level of safety in part 135, the FAA is proposing in § 194.307(d) that if a certificate holder has not previously proven a powered-lift in operations under part 135, they be required to conduct at least 25 hours of proving tests acceptable to the FAA as detailed in § 135.145(b)(1) through (3).

The FAA requires validation testing for certain authorizations, and for the addition of certain aircraft that were previously proved or validated but are not of the same make or model, or of similar design. The requirements of § 135.145(d)(2) through (4) are not aircraft specific and would apply to an operator utilizing powered-lift and requesting authorization to conduct these types of operations. Section 135.145(d)(1) requires validation tests for the addition of an aircraft that requires two pilots for flight in VFR conditions, or turbojet airplanes. The FAA proposes in §194.307(e) that, for the same reasons cited above for proving tests, validation testing required by § 135.145(d)(1) apply to all powered-lift. Therefore, the FAA proposes validation testing be required when an operator requests authorization to use a powered-lift, unless a powered-lift of the same make or similar design has been previously proved or validated by that operator in operations under part 135.

In 1989, the FAA revised the equipment requirements and moved them into a new section, § 135.150, which requires a public address and crewmember interphone systems for aircraft that have a passenger seating configuration of more than 19, excluding any pilot seat.[421] The public address system required by § 135.150(a) is generic to all aircraft; however, under paragraph (a)(7), transport category airplanes manufactured on or after

[421] See Independent Power Source for Public Address System in Transport Category Airplanes, 54 FR 43922 (Oct. 27, 1989).

November 27, 1990, must meet the requirements of § 25.1423. The crewmember interphone system required by § 135.150(b) is also generic to aircraft; however, for large turbojet-powered airplanes, they must meet the additional requirements contained in paragraph (b)(7). This section increases airplane safety by facilitating the rapid evacuation of passengers during emergency conditions. Section 135.150 works in conjunction with § 25.1423, which requires any public address (PA) system that is required for use in air carrier service to be powered by a source that remains powered when the aircraft is in flight or stopped on the ground, after the shutdown or failure of all engines and auxiliary power units, or the disconnection or failure of all power sources dependent on their continued operation. Additionally, the PA system must incorporate specific design features, accessibility requirements, and be able to operate for a specified period of time. The crewmember interphone system requirement established in § 135.150(b) was originally promulgated to ensure the safety and security of passengers.[422] The FAA noted that an aircraft of more than 19 passenger seats was of the size that would benefit from the safety advantages of having a crewmember interphone and public address system installed.[423] A powered-lift with more than 19 passenger seats will also benefit from a crewmember interphone and PA system. Additionally, due to the design features of some powered-lift, such as multiple rotating blade assemblies, it will be essential for the flightcrew to be able to communicate with the cabin crew and passengers during an emergency evacuation. This will promote safe, effective evacuations of these aircraft. The FAA proposes in § 194.307(f) that for large powered-lift, the public address system required by § 135.150(a)(7) comply with § 25.1423 or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b). Additionally, the FAA proposes in § 194.307(g) that for large powered-lift that have

---

[422] Independent Power Source for Public Address System in Transport Category Airplanes, 54 FR 43926 (Oct. 27, 1989).
[423] Id.

more than 19 passenger seats, regardless of the type of powerplant, the crewmember interphone system comply with the requirements of § 135.150(b)(7) or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b). The FAA acknowledges that while no powered-lift that have more than 19 passenger seats are currently undergoing type certification such aircraft may be developed in the future.

Section 135.151 requires cockpit voice recorders (CVRs) on certain turbine-powered airplanes and rotorcraft. CVRs enhance safety and are required in turbine-powered airplanes and rotorcraft carrying a certain passenger count as a necessary hazard analysis tool used during an accident investigation. The FAA asserted as early as 1978 that consideration should be given to requiring Ground Proximity Warning Systems (GPWS), CVR, and FDR equipment on turbojet-powered airplanes with 10 or more passenger seats due to the complexity and high-performance characteristics of those airplanes.[424] CVRs provide accident investigation information that is unattainable from any other source, with valuable auditory information such as sounds captured in the cockpit. These sources of information aid in determining causal and contributing factors in accident and incident investigation. Amendments issued in response to NTSB recommendations as well as congressional mandates identify the FAA's broader responsibility to apply these appropriately to all aircraft with certain seating capacities.[425]

Section 135.151(a) requires a multiengine, turbine-powered airplane or rotorcraft having a passenger seating configuration of six or more and for which two pilots are required by certification or operating rules to be equipped with an approved cockpit voice recorder that meets various CVR installation requirements provided by the airworthiness standards for normal category airplanes or rotorcraft, or transport category airplanes or

---

[424] Air Taxi Operators and Commercial Operators, 43 FR 46759 (Oct. 10, 1978).
[425] Cockpit Voice Recorders and Flight Recorders, Final Rule, 53 FR 26135 (Jul. 11, 1988).

rotorcraft, as applicable. Section 135.151(b) requires a multiengine, turbine-powered airplane or rotorcraft having a passenger seating configuration of 20 or more to be equipped with an approved CVR that meets various CVR installation requirements provided by the airworthiness standards for normal category airplanes or rotorcraft, or transport category airplanes or rotorcraft, as applicable. Both § 135.151(a) and (b) further require that the cockpit voice recorder be operated continuously from the use of the check list before the flight to completion of the final check list at the end of the flight.

Section 135.151(d) requires large turbine-powered airplanes manufactured after October 11, 1991 to be equipped to record uninterrupted audio signals received by a boom or mask microphone in accordance with § 25.1457(c)(5). Paragraph (d) also requires that on these aircraft equipped to record the uninterrupted audio signals received by a boom or a mask microphone, the flightcrew members must use the boom microphone below 18,000 feet mean sea level.

Section 135.151(g) applies to aircraft manufactured on or after April 7, 2010, which includes the caveat that if the aircraft is also required to have a flight data recorder (FDR) under § 135.152, then the aircraft must have a CVR that meets the requirements listed in paragraph (g)(1) (applicable to multiengine, turbine-powered airplanes or rotorcraft with a passenger seating configuration of six or more seats and for which two pilots are required by certification or operating rules) or (g)(2) (applicable to multiengine, turbine-powered airplanes or rotorcraft with a passenger seating configuration of 20 or more seats). Such aircraft equipped with an FDR have different requirements for cockpit voice recorders because the FAA found that, for newly manufactured aircraft also required to have a flight data recorder, "evidence of benefit in changes to wiring systems

that could prevent inadvertent shutdown of power sources, and for an independent power supply for CVRs."[426]

Section 135.151(h) applies to all airplanes and rotorcraft that are required by this part to have a CVR and a FDR that also have datalink communication equipment that was installed on or after December 6, 2010. For those aircraft, all datalink messages must be recorded.

For the same reasons the FAA imposed the CVR requirements for certain airplanes and rotorcraft, the FAA proposes to require CVRs for powered-lift with similar seating configurations and pilot requirements. Specifically, the FAA proposes, regardless of the types of powerplant, that powered-lift which have a passenger seating configuration of six or more and for which two pilots are required by certification or operating rules, or that have a passenger seating configuration of 20 or more seats will be required to comply with paragraph (a), (b), or (g), based upon the passenger seating configuration and whether an FDR is required under § 135.152. These proposals are contained in § 194.307(h), (i), (k), and (l). The FAA also proposes in § 194.307(j) and (m) that although paragraphs (d) and (h) reference airplanes or rotorcraft, these paragraphs will also apply to powered-lift to ensure they appropriately record uninterrupted audio signals and that all datalink messages are recorded when required. The FAA intends to include CVR airworthiness requirements during type certification based on an applicant's proposed operational needs. Operators will need to ensure that the CVR for each powered-lift be installed and equipped in accordance with the certification provisions listed in the applicable paragraph of § 135.151 or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b).

---

[426] Revisions to Cockpit Voice Recorder and Digital Flight Data Recorder Regulations, 70 FR 9751 (February 28, 2005).

The FAA is proposing in § 194.307(n) to apply flight data recorder requirements of § 135.152 to powered-lift because of the same rationale discussed previously for § 135.151. Section 135.152(a) requires that a multiengine, turbine-engine powered airplane or rotorcraft having a passenger seating configuration, excluding any required crewmember seat, of 10 to 19 seats, that was either brought onto the U.S. register after, or was registered outside the U.S. and added to the operator's U.S. operations specifications after October 11, 1991, to be equipped with one or more approved flight recorders that uses a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. Additionally, this paragraph requires that the flight recorder must retain no less than 25 hours of aircraft operation. The FAA proposes in § 194.307(o) that a powered lift, regardless of the type of powerplant, that otherwise meets the threshold requirements of this paragraph be required to comply with this paragraph. However, paragraph (a) specifies that the parameters for the flight recorder that must be recorded are contained in part 135, appendix B or C, which are specific to airplanes or rotorcraft. As discussed extensively throughout this preamble, powered-lift are manufactured combining the design features of an airplane and helicopter with complex systems. The FAA does not have sufficient experience and knowledge of every possible design type of powered-lift, as most powered-lift are still in development.

Accordingly, in place of appendices B and C to part 135,[427] the FAA has drafted new flight data recorder tables, which appear in proposed §§ 194.314 and 194.315,[428] which outline the FDR specifications for powered-lift under part 135. In developing these tables, the FAA applied the FDR requirements from the airplane and helicopter appendices to powered-lift, dependent on which operational flight mode is in use (i.e., wing-borne flight mode or vertical-lift flight mode). In addition, the FAA replaced

---

[427] See appendix B to part 135, Airplane Flight Recorder Specifications, and appendix C to part 135, Helicopter Flight Recorder Specifications, 14 CFR part 135.
[428] The SFAR tables are found in the regulatory text within the SFAR amendment.

helicopter-specific nomenclature to accommodate powered-lift. For example, helicopter flight controls, as written, describe pedals and collective controls, which may not apply to powered-lift. In addition, the FAA changed the terminology that provided directional controls for "ascent and descent". Notwithstanding slight nomenclature changes within the parameters, the FAA did not change the other information and numbers within the appendices. The FAA invites comments on these draft tables to ensure that the FAA has adequately addressed all of the requirements for these novel aircraft.

Section 135.152(b) applies to multiengine turbine-powered airplanes having a passenger seating configuration of 20 to 30 seats and to multiengine turbine-powered rotorcraft having a passenger seating configuration of 20 or more seats. Paragraph (b) requires these aircraft to be equipped with one or more approved flight recorders that utilize a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. Additionally, paragraphs (b)(1) and (2) provide the FDR parameters that are required for aircraft type certificated before and after October 1, 1969. After this date, the number of mandatory parameters an aircraft must record are determined by the date of aircraft type certification of that aircraft. Paragraph (b)(3) requires that the FDRs on the aircraft referenced in paragraph (b) introductory text[429] manufactured after October 11, 1991, must record all the parameters outlined in appendix D or E to part 135. Currently, the FAA is not aware of any powered-lift designs that contain 20 or more passenger seats; however, should an applicant seek to certificate a powered-lift with a passenger seating configuration of 20 or more seats, the FAA proposes in § 194.307(p) that paragraphs (b) introductory text and (b)(3) apply to these aircraft, regardless of the type of powerplant. Because the FAA does not anticipate any powered-lift with this seating configuration to be developed during the term of this

[429] As mentioned above, paragraph (b) applies to multiengine turbine-powered airplanes with a passenger seating configuration of 20 to 30 seats and to multiengine turbine-powered rotorcraft with a passenger seating configuration of 20 or more seats.

SFAR, the FAA has determined it will not create a new FDR table that addresses powered-lift of this size at this time. For potential future rulemaking, the FAA welcomes input on the FDR parameters that would be essential for a powered-lift of this size.

Section 135.152(c) requires that an installed flight recorder be operated continuously from the instant the airplane begins the takeoff roll or the rotorcraft begins the lift-off and until the airplane has completed the landing roll or the rotorcraft has landed at its destination. Powered-lift may perform takeoffs and landings similar to airplanes or rotorcraft; accordingly, the FAA proposes in § 194.307(n)(3) to apply the requirements of § 135.152(c) to powered-lift with a passenger seating configuration, excluding crewmember seats, of 10 to 30, whenever the takeoff roll or lift off begins and until the landing is completed.

Paragraph (d) in § 135.152 requires the certificate holder to keep certain recorded data for a specified time. Paragraph (d) requires the certificate holder to keep the recorded data until the airplane has been operating for at least 25 hours and, for a rotorcraft, 10 hours. The difference in the amount of FDR recorded data required for rotorcraft versus airplanes was because the FAA agreed that rotorcraft typically operate short-haul flights and that a 10-hour requirement is adequate for rotorcraft.[430] Although the range is expected to be closer to that of a rotorcraft, the precise range of future powered-lift is uncertain and thus, conservatively, the FAA is proposing to apply the 25-hour requirement currently applicable to airplanes. Accordingly, the FAA has considered both recorded data requirements of § 135.152(d) and proposes in § 194.307(n)(2) to require certificate holders to keep the data until the powered-lift has been operating for at least 25 hours. This requirement would be applicable to powered-lift with a passenger seating configuration, excluding crewmember seats, of 10 to 30.

---

[430] Cockpit Voice Recorders (CVR) and Flight Recorders, 53 FR 26134 (Jul. 11, 1988).

The FAA has determined that § 135.152(e) is already applicable to powered-lift because it applies to aircraft; accordingly, in the event of any accident or occurrence that requires the immediate notification of the NTSB and that results in the termination of the flight, the certificate holder must remove the recording media from the powered-lift and keep the recorded data for at least 60 days or for a longer period, if requested by the NTSB or the FAA.

Paragraph (f)(1) of § 135.152 imposes requirements for FDR systems installed on airplanes manufactured on or before August 18, 2000, and "all other aircraft." Notwithstanding this description, paragraphs (a) and (b) state that § 135.152 only applies to certain airplanes and rotorcraft with passenger seating configurations between 10 and 30 seats. Paragraph (f)(2) imposes requirements for FDR systems installed on airplanes manufactured after August 18, 2000. As indicated in previous discussions, the flight recorder must be installed and equipped in accordance with the appropriate certification provisions listed in § 135.152 or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b). In addition to the installation requirements, paragraphs (f)(1) and (2) both require a correlation to be established between the values recorded by the FDR and the corresponding values being measured. Establishing a correlation for the required parameters is essential to derive meaningful data for the recorded digital signal from the FDR. This correlation converts the recorded basic digital signal into engineering units so when the recorder is downloaded, the data will be certified to provide accident investigators and operators information that is representative of the actual aircraft system units such as degrees of pitch, roll or yaw; altitude in feet; and airspeed in knots instead of the recorded digital signal format. Without this correlation document, accident and incident investigators or operators will not be able to derive meaningful information from the FDR. Operators must have this correlation information readily available for the aircraft they operate. Therefore, the FAA

proposes in § 194.307(n)(1) that paragraphs (f)(1) and (2) apply to powered-lift that are otherwise required by this section to have an FDR installed. This requirement will help ensure the FDR systems are installed adequately and the appropriate correlations are established. Because the specific parameters for compliance with paragraph (f) will be established through the type certification process for each powered-lift, specific compliance with this paragraph will be established in accordance with the airworthiness criteria for the aircraft.

Paragraph (g) requires each flight recorder required under § 135.152 that records the data specified in paragraphs (a) and (b)[431] to have an approved device to assist in locating that recorder under water. As explained above, the FAA proposes applying paragraphs (a) and (b) to powered-lift with a passenger seating configuration of 10 to 19 seats or with a passenger seating configuration of 20 to 30 seats, respectively. Because paragraphs (a) and (b) apply to powered-lift, paragraph (g) would also apply, thereby helping to ensure the recorder is found if a powered-lift has an accident or occurrence into water.

Paragraph (h) outlines the operational parameters that digital FDRs must record as required under paragraphs (i) and (j). Examples of these operational parameters include time, pressure altitude, indicated airspeed, and pitch attitude. The operational parameters cover all aircraft and are established to ensure the minimum parameters needed to assist in determining probable cause are recorded when an information source for those parameters is installed. This list, in conjunction with the FDR tables proposed in §§ 194.314 and 194.315, will specify what parameters must be recorded and the ranges, accuracies, resolutions, and recording intervals requirements of those parameters.

---

[431] Paragraphs (a) and (b) require the flight recorders to use a digital method of recording and storing data and a method of readily retrieving that data from the storage medium. These paragraphs also require the recorder to record the parameters outlined in the appropriate SFAR tables.

Accordingly, at this time, the FAA determined that all of the items in this list apply to powered-lift that are required to have an FDR in accordance with this section.

Paragraphs (i) and (j) apply to all turbine-engine powered airplanes with a seating configuration, excluding any required crewmember seat, of 10 to 30 passenger seats. Paragraph (i) is applicable to aircraft manufactured after August 18, 2000, and limits the required parameters to those listed in paragraphs (h)(1) through (57); however, this paragraph does not apply as it is superseded by paragraph (j) for aircraft manufactured after August 19, 2002. Paragraph (j) applies to all turbine-engine powered airplanes manufactured after August 19, 2002, with a seating configuration, excluding any required crewmember seat, of 10 to 30 passenger seats and requires the parameters listed in paragraphs (h)(1) through (88)[432] to be recorded within the ranges, accuracies, resolutions, and recording intervals specified in appendix F to part 135. As described in the discussion of § 135.152(b) above, the FAA is not aware of any powered-lift designs that contain 20 or more passenger seats. Notwithstanding, to the extent a manufacturer develops a powered-lift with a passenger seating configuration of 20 or more seats, the FAA proposes paragraph (j) apply to these aircraft, as well as to those with 10-19 seats. Because the FAA does not anticipate any powered-lift with this seating configuration to be developed during the term of this SFAR, the FAA has determined it will not create a new FDR table that addresses powered-lift of 20-30 passenger seats at this time. For potential future rulemaking, the FAA seeks comment on the FDR parameters that would be necessary for a powered-lift of that size. Powered-lift with 10-19 seats would comply with the FDR tables developed for this SFAR for operations under part 135, set forth in proposed §§ 194.314 and 194.315.

---

[432] As explained below, the FAA proposes permanently amending paragraph (j) to cross-reference paragraph (h) instead of paragraph (a).

While considering the FDR requirements of § 135.152, the FAA became aware of the need for a technical correction in paragraph (j), which cross-references the operational parameters that must be recorded for turbine-engine powered airplanes with a seating configuration of 10 to 30 passengers seats. Currently, paragraph (j) references the parameters in paragraphs (a)(1) through (88); however, the parameters are enumerated under paragraph (h) not paragraph (a). Moreover, the proposed rule that added these parameter requirements explained that § 135.152(j) would require the above-referenced airplanes "to record the parameters listed in paragraph (h)(1) through (88) of this section".[433] The FAA is proposing to correct the cross-reference in paragraph (j) to refer to paragraphs (h)(1) through (88).

Paragraph (l) does not apply to powered-lift because it applies to "all aircraft manufactured before April 7, 2010"; however, paragraph (m) applies to all aircraft manufactured on or after April 7, 2010, and that are required to have a FDR installed. This paragraph requires these aircraft to have a FDR installed that also meets the certification requirements under § 23.1459 or § 25.1459 that were not included in paragraph (f)(2). As indicated in previous discussions, the installation requirements for FDRs on powered-lift will be established through the type certification process as set forth in § 21.17(b). In general, § 135.152(m) requires that all aircraft FDR systems receive electrical power from the bus that provides the maximum reliability for operation of the FDR without jeopardizing service to essential or emergency loads; that the FDR remains powered for as long as possible without jeopardizing emergency operation of the aircraft; that any single electrical failure external to the FDR does not disable both the CVR and the FDR; and they provide requirements for installation of combined flight data and CVRs. These requirements are applicable to powered-lift because they ensure the

[433] Revisions to Digital Flight Data Recorder Rules, NPRM, 61 FR 37144, 37156 (Jul. 16, 1996).

data essential for post-accident or incident investigation are reliably recorded during all foreseeable accident or incident scenarios.

Section 135.154 requires turbine-powered airplanes to be equipped with TAWS. These types of systems were previously known as Ground Proximity Warning Systems (GPWS) and then Enhanced Ground Proximity Warning Systems (EGPWS). TAWS equipment is broken down into 2 different classes: Class A TAWS and Class B TAWS. Class A TAWS equipment is required for airplanes operated under parts 121 and 135 configured with 10 or more passenger seats. Class B TAWS equipment is required for airplanes operated under part 135 with a passenger seating configuration of 6 to 9 seats. In addition to TAWS, HTAWS are currently only required in HAA operations.

The FAA promulgated § 135.154 in response to several NTSB recommendations resulting from accidents involving controlled flight into terrain (CFIT).[434] Additionally, multiple DOT Volpe National Transportation Systems Center (VNTSC) studies found that GPWS and EGPWS equipment could be a particularly effective means of preventing CFIT accidents.[435] After the GPWS rules were issued, advances in terrain mapping technology permitted the development of a new type of GPWS that provides greater situational awareness for flight crews—TAWS.

TAWS improved on the existing GPWS systems by providing the flight crew with earlier aural and visual warnings of impending terrain. Class A and B TAWS incorporate a forward-looking capability. In addition, Class A TAWS equipment includes current GPWS-required functions and provides the pilots with a visual representation of the impending terrain by use of a display unit.[436] These improvements in TAWS provide the flight crew with more time and greater situational awareness to enable them to take positive corrective actions. HTAWS, like Class A TAWS, provides a display unit for the

---

[434] Terrain Awareness and Warning System, 65 FR 16737 (Mar. 29, 2000).
[435] Id.
[436] Display units in Class B TAWS are not required.

pilots to see a visual depiction of the terrain ahead. Both Class A and B TAWS units look farther ahead of the airplane and provide terrain and obstacle alerts sooner than the HTAWS alerts. In addition, both Class A and B TAWS units provide a greater terrain clearance in comparison to HTAWS.

With the greater terrain clearance and farther look ahead of TAWS, for certain operations, there is the potential of low altitude nuisance alerts in rotorcraft or powered-lift operations because this equipment is designed for forward flight of an airplane rather than the flight characteristics of a rotorcraft or powered-lift. Nuisance alerts can be dangerous because they may dilute the effectiveness of TAWS when a pilot inhibits or ignores repetitive alerts. These nuisance alerts can also become a distraction especially when a pilot is in a high workload or emergency situations where the pilot's attention and ability to respond may be compromised, such as during approach and landing phases of flight. Compared to TAWS, HTAWS would be more likely to reduce nuisance alerts because the HTAWS units use a closer-in look at the terrain rather than looking farther out like the TAWS units. This is an important distinction considering the high-performance characteristics and the anticipated low altitude operating environment in which powered-lift are likely to operate.

Powered-lift operate in a manner similar to airplanes in cruise flight and conduct take-off and landing operations similar to helicopters. However, the FAA expects the transition of a powered-lift from cruise flight to vertical flight will not be instantaneous, regardless of the type of powerplant. The current TAWS and HTAWS, individually, are not a complete solution for powered-lift that operate similar to both airplanes and helicopters. Although there is no specification yet developed that incorporates the features of both TAWS and HTAWS in a single unit, the FAA would consider a hybrid system in a powered-lift that utilizes the features of a TAWS A system for wing-borne flight and HTAWS for vertical flight modes of operation for compliance with § 135.154.

The FAA has determined that without a TAWS A/HTAWS hybrid system, and until a TAWS specification is developed specifically for powered-lift, the current HTAWS specification, which requires a terrain display unit, would provide the best level of safety without an undue number of nuisance alerts. To ensure that powered-lift engaged in air carrier operations will be operated at the highest possible degree of safety, as required by 49 U.S.C. 44701(d)(1)(A), the FAA proposes in § 194.307(q) that powered-lift having a passenger seating configuration, excluding any pilot seat, of 6 or more be equipped with a HTAWS that meets the requirements in Technical Standard Order (TSO) C194 and Section 2 of RTCA DO-309, as prescribed for helicopters and contained in §135.605, unless equipped with a FAA approved TAWS A/HTAWS hybrid system.

In addition, the FAA proposes in § 194.307(q) that § 135.154(c) apply to powered-lift as they will be required to have an aircraft flight manual that contains the appropriate procedures on the use of this equipment and the proper flight crew reactions in response to a HTAWS activation. This will ensure powered-lift equipped with HTAWS or an FAA approved TAWS A/HTAWS hybrid system are operated at a level of safety that a terrain awareness system currently provides for airplanes.

Section 135.158 requires transport category airplanes equipped with a flight instrument pitot heating system to also be equipped with an operable pitot heat indication system that complies with § 25.1326.[437] The FAA added this requirement for transport category airplanes to provide greater assurance that pilots would be alerted when the pitot heat was not operating and reduce the possibility of the pilots relying on faulty flight data instrumentation indications for aircraft control.[438] On March 13, 1978, the FAA published the final rule requiring pitot heat warning indicators on transport category airplanes.[439]

---

[437] Transport Category Airplanes—Pitot Heat Indication Systems, Final Rule, 46 FR 43804 (Aug. 31, 1981).
[438] Transport Category Airplanes—Pitot Heat Indication Systems, NPRM, 43 FR 10338 (Mar. 13, 1978).
[439] Id.

This requirement was added to part 25 (§ 25.1326) and to part 91 (§ 91.50).[440] Existing part 135 operators were required to comply with the requirements of § 91.50, so a separate rule specifically for part 135 was not required. On August 31, 1981, the FAA published a final rule relieving general aviation operators of transport category airplanes operated under part 91 from the requirement to install a pitot heat indicating system citing that there were no records of general aviation transport category airplane accidents that were attributable to a pitot heating system failure.[441] In that rulemaking the FAA also stated that part 91 operations are not any less susceptible than operations conducted under part 135 to the problems at which Amendment 91-148 was directed. However, the FAA also stated that it holds part 135 operations to a higher level of safety and there are stricter safety standards than those placed on part 91 operations. As a result, the FAA added the pitot heat warning indicator requirement into § 135.158.[442]

Section 135.158 was initially codified for transport category airplanes, to ensure that the flight crew receives an indication when the pitot heating system is not operating. Since the inception of this rule in 1978, technological advances in aircraft display and control systems, such as fly by wire, highly integrated glass cockpits, and highly augmented advanced flight control systems which require accurate sensory data, further justify the need for accurate pitot/static information captured into the processing units on powered-lift. The FAA anticipates that powered-lift will incorporate the technological advances in aircraft display, will require highly augmented advanced flight control systems, and will be capable of operations in conditions conducive to icing. Accordingly, the FAA proposes in § 194.307(r) that § 135.158 apply to all powered-lift that have a required pitot heating system installed.

---

[440] Id.
[441] Transport Category Airplanes—Pitot Heat Indication Systems, Final Rule, 46 FR 43804 (Aug. 31, 1981).
[442] Id.

The FAA adopted § 135.159 in 1986 as a result of the Rotorcraft Regulatory Review Program.[443] The requirement for a gyroscopic rate-of-turn indicator is required for aircraft carrying passengers under VFR at night or under VFR over-the-top except as provided in § 135.159(a)(1) through (3).[444] Amendments to § 135.159 updated the airworthiness and operating requirements to reflect advanced technology being incorporated in current designs while maintaining an acceptable level of safety.[445] These amendments also included related changes to the general and air taxi operating rules, including an exception under § 135.159(a)(1) and (2) allowing a third attitude indicator in lieu of a gyroscopic rate-of-turn indicator.[446] These proposals arose from the recognition, by both government and industry, that updated safety standards are needed for an acceptable level of safety in the design requirements for airplanes and helicopters that are used in both private and commercial operations. The rule provides that flight instrument systems with a third attitude indicator need not include the gyroscopic rate-of-turn indicator. Allowing a third attitude indicator with a dedicated power supply to replace the gyroscopic rate-of-turn indicator relieves the burden on the manufacturer and allows safer operations because attitude indicators provide both aircraft bank and pitch information to the pilot, thus increasing aircraft control and safety as compared to only a gyroscopic rate-of-turn indicator.

Because powered-lift will be operated much like a traditional airplane in cruise flight, the FAA proposes in § 194.307(s) that the exception detailed in § 135.159(a)(1) should also apply to powered-lift. Conversely, given the similarities of powered-lift and traditional airplanes during cruise flight, the FAA does not propose to apply the helicopter-specific paragraphs prescribed in § 135.159(a)(2) and (3) to powered-lift. For

---

[443] Rotorcraft Regulatory Review Program Amendment No. 5; Operations and Maintenance, 51 FR 40695 (Nov. 7, 1986).
[444] VFR over-the-top, with respect to the operation of aircraft, means the operation of an aircraft over-the-top under VFR when it is not being operated on an IFR flight plan.
[445] Small Airplane Airworthiness Review Program Amendment No. 5, 55 FR 43306 (Oct. 26, 1990).
[446] Id.

more information on this topic, please refer to the discussion in section VI.A regarding the applicability of § 91.205(d).

Section 135.165 details communication and navigation equipment for extended over-water or IFR operations. This section is general to aircraft except for § 135.165(d) and (g)(1) which are specific to airplanes. In the final rule published in 1978, the FAA summarized the equipment requirements listed in § 135.165 as essential to safety of extended over-water and IFR operations, and for maintaining communications during these operations.[447]

Paragraph (d) contains the communication equipment requirement for turbojet airplanes that have a passenger seat configuration, excluding any pilot seat, of 10 seats for more, or for a multiengine airplane used in commuter operations. Although this paragraph specifies airplanes, the FAA determined that this paragraph should also apply to powered-lift with a passenger seating configuration, excluding any pilot seat, of 10 seats or more, or a powered-lift used in commuter operations, regardless of the type of powerplant, as proposed in § 194.307(t).

Paragraph (g) provides for extended over-water exceptions that allow the use of a single long-range navigation and single long-range communication system in certain geographic areas as authorized by the FAA. A list of operational factors the FAA may consider is listed in paragraph (g)(1) through (3) of this section. Although paragraph (g)(1) uses the term airplane, the FAA proposes in § 194.307(u) to extend the ability to request that exception to powered-lift that are able to conduct extended over-water operations.

The FAA proposes that paragraphs (d) and (g)(1) apply to powered-lift, as previously described. Powered-lift operate like airplanes while in cruise flight, and any

---

[447] Regulatory Review Program; Air Taxi Operators and Commercial Operators, 43 FR 46742 (Oct. 10, 1978).

powered-lift that triggers the threshold for applicability of this section should be operated at the same level of safety as an airplane. This will ensure powered-lift will be able to communicate as required during IFR and extended over-water flights.

Section 135.169 provides for additional airworthiness requirements for large airplanes, or small airplanes with a passenger-seating configuration of 10 or more seats. These airplanes are held to a higher airworthiness safety standard either through aircraft certification basis or certain other regulatory standards or requirements. This regulation also has certain rules about the material used as a liner for cargo or baggage compartments. The preamble from the final rule promulgating this regulation states that the purpose of the rule was to ensure that airplanes of this size used in part 135 operations met a higher level of airworthiness standards for equipment and materials used.[448] Powered-lift will spend their cruise portion of flight similar to airplanes, including the in-flight environment in which they operate. When a powered-lift is configured with 10 or more passenger seats or is large, the persons riding on that aircraft should be afforded the same level of safety afforded to them if they were a passenger in an airplane. At this time, the FAA has not identified a reason to differentiate between airplanes and powered-lift when it relates to the safety standards required by this section as detailed below.

Section 135.169(a) applies to large airplanes and requires them to meet the additional airworthiness requirements of §§ 121.213 through 121.283 and 121.307. Section 121.213 no longer exists; §§ 121.215 through 121.283 provide additional airworthiness requirements for aircraft equipment and materials (e.g., materials for the cabin interior, internal doors, fuel valves, fire walls, and lines and fittings). Section 121.307 requires certain engine instruments such as a carburetor air temperature indicator, fuel pressure indicator, and manifold pressure indicator. The FAA proposes in § 194.307(v) to require a large powered-lift to comply with appropriate certification

[448] See Air Taxi and Commercial Operators, 42 FR 43490 (Aug. 29, 1977).

provisions listed in § 135.169(a) or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b), as previously discussed in section IV.A of this preamble.

Section 135.169(b) applies to operators of small airplanes that have a passenger seating configuration, excluding pilot seats, of 10 seats or more and requires certain type certifications for these aircraft. The FAA has determined that paragraphs (b)(2) through (7) would not be applicable to powered-lift, as these aircraft are new designs and would be required to meet the latest aircraft certification safety standards. The remaining provisions in paragraph (b) — paragraphs (b)(1) and (8) — were determined to be applicable to powered-lift. Paragraph (b)(1) requires the airplane be certificated in the transport category, and paragraph (b)(8) requires certification in the normal category as a multi-engine certification level 4 airplane as defined in part 23. The FAA proposes in § 194.307(w) that small powered-lift with a passenger seating configuration of 10 seats or more operating under part 135 must comply with the applicable part 23 provisions identified in § 135.169(b)(8) or such airworthiness criteria as the FAA may find provides an equivalent level of safety in accordance with § 21.17(b). The purpose of proposed § 194.307(w) will ensure that, at a minimum, a small powered-lift utilized in part 135 operations and carrying more than 10 passengers will achieve a certification standard at least equivalent to the standard set forth in § 135.169(b)(8) or a higher standard.

Section 135.169(d) addresses cargo or baggage compartment requirements of 200 cubic feet or greater volume in transport category airplanes. The intent of § 135.169(d) is to reduce the risk of fire burning through the compartment liner and becoming uncontained by requiring more flame-resistant materials.[449] The FAA has determined that ceiling and sidewall liner panels such as Kevlar or Nomex, aluminum or glass fire

[449] See Fire Protection Requirements for Cargo or Baggage Compartments, Final Rule, 54 FR 7384 (Feb. 17,1989).

reinforced resin should be required. Accordingly, the FAA proposes in § 194.307(x) for large powered-lift that have a cargo or baggage compartment of 200 cubic feet or greater, be required to meet the certification requirements of part 25, appendix F, part III, or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b). The FAA identified that the same benefits exist for ensuring that large cargo or baggage compartments meet the certification requirements of part 25 or equivalent for powered-lift as exist for airplanes.

Section 135.170 lists the requirements for materials used in the compartment interiors of specific airplanes as denoted in this rule. The flammability requirements are tied to the number of seats in the airplane to increase survivability in the case of an in-cabin fire. These regulations were promulgated for airplanes because there were far fewer helicopters that had a similar number of seats, and due to the performance characteristics of airplanes, descent, landing, and evacuation would take longer in an airplane than in a helicopter with a similar number of seats. Some powered-lift may be able to transition to landing quickly; however, others may have descent, landing, and evacuation times similar to airplanes.

Section 135.170(b) applies to large airplanes and specifies additional airworthiness requirements that must be met. To maintain a high level of safety, and until the FAA has more experience with commercial operations conducted with large powered-lift, the FAA proposes in § 194.307(y) and (z) that large powered-lift comply with the applicable paragraphs of § 135.170(b)(1) and (2). Powered-lift must comply with appropriate certification provisions listed in § 135.170(b)(1) and (2) or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b).

Section 135.170(c) details the requirements for thermal/acoustic materials on transport category airplanes. For large powered-lift, the FAA asserts that the flame

propagation requirements applicable to transport category airplanes should also be applicable. This will help to ensure that persons or property carried on large powered-lift are afforded the same safety provided to persons or property carried in transport category airplanes. Accordingly, large powered-lift would be required to comply with the provisions of § 135.170(c). As proposed in § 194.307(aa), this section requires that large powered-lift comply with § 25.856 (Thermal/Acoustic insulation materials) or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b).

Section 135.173(a) requires aircraft, excluding helicopters operating under day VFR conditions, that have a passenger seating configuration, excluding any pilot seat, of 10 seats or more in passenger-carrying operations to be equipped with either approved thunderstorm detection equipment or approved airborne weather radar equipment. Helicopters were excluded from this requirement for day VFR flights in 1986.[450] Though helicopters have less potential range than airplanes, making it more difficult for helicopters to escape a weather system once within one, helicopters are highly maneuverable and have the capability to adjust altitude and direction rapidly. This enables them to change altitude, airspeed, and direction rapidly in order to circumnavigate or avoid a thunderstorm.

Section 135.173(b) is specific for helicopters and only requires this equipment under night VFR when current weather reports indicate that thunderstorms or other potentially hazardous weather conditions that can be detected with airborne thunderstorm detection equipment may reasonably be expected along the route to be flown. This equipment is beneficial for night operations because considerable thunderstorm activity occurs at night and this equipment aids in locating hazardous unseen storm activity. This

[450] Rotorcraft Regulatory Review Program Amendment No. 5; Operations and Maintenance, 51 FR 40692 (Nov. 7, 1986).

contributes to greater safety in operations because it enables the pilot to detect and locate severe adverse weather areas early. The equipment also enables the pilot to avoid these areas or take other action necessary for safety of flight. The FAA asserted that although a helicopter has the ability to land in small areas and can use this ability to avoid hazardous weather conditions, this advantage is not significant during VFR night operations when a landing option may not be available, such as when over water, forests, mountainous or congested areas, or when visibility is restricted.[451] Additionally, a helicopter is as susceptible to thunderstorm hazards as the airplane if the pilot fails to avoid severe weather areas.

The FAA has determined that the helicopter exception contained in this regulation should not apply to powered-lift because these new entrant aircraft are expected to operate similar to an airplane during the en route phases of flight and at this point, the agency does not have enough information about the operations of powered-lift to state definitively whether they will have the agility and maneuverability of a helicopter during the cruise portion of flight. Powered-lift will likely require more time and space to recognize and successfully maneuver out of the dangers associated with hazardous thunderstorm activity. The FAA expects to gather more information about this during the term of the SFAR.

Section 135.178 details additional emergency equipment applicable to airplanes having a passenger seating configuration of more than 19 seats. Helicopters generally do not meet the threshold of having this configuration. This section was implemented largely due to several studies conducted by the Civil Aerospace Medical Institute (CAMI) on exit row configurations and equipment necessary for the most efficient emergency exit of the airplane in the case of emergency.[452]

---

[451] Rotorcraft Regulatory Review Program Notice No. 5, 50 FR 10144 (Mar. 13, 1985).

[452] See Improved Access to Type III Exits, 57 FR 19220 at 19245 (May 4, 1992).

The FAA anticipates that due to advances in technology, powered-lift developed in the future could surpass the 19-passenger seating configuration. The FAA proposes in § 194.307(bb) that when a powered-lift is operated while having a passenger seating configuration of more than 19 seats this rule should be applicable because a powered-lift that is able to carry more than 19 passengers should have the requisite procedures and equipment to evacuate those passengers in the event of an emergency such as is currently required for airplanes. As proposed, this section requires that certain powered-lift meet specific airworthiness requirements from part 25. Powered-lift must comply with appropriate part 25 certification provisions listed in § 135.169(a) or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b).

Section 135.179 contains the conditions required to take off an aircraft with inoperable instruments or equipment, lists the Minimum Equipment List (MEL) requirements, and what instruments and equipment may not be contained within the MEL. The availability of a MEL in part 135 was introduced with the publication of the final rule on October 10, 1978.[453] Until 1991, only multi-engine aircraft were permitted to use a MEL, then the FAA published a final rule expanding the availability of a MEL to any civil aircraft that can be operated under part 135, including single-engine aircraft. The notice of proposed rulemaking[454] that is directly related to the 1991 final rule states that the MEL provisions would apply to "aircraft" and that "[t]he FAA also proposes to amend the language of §§ 135.179 and 125.201 to make them essentially the same as § 121.628".[455] The FAA notes that the mention of airplane in § 135.179(b)(1) appears to be an oversight in transcription and should actually reference aircraft, as do the rest of the references in § 135.179. This is in contrast to § 121.628, where all references are to

[453] Air Taxi Operators and Commercial Operators, 43 FR 46770 (Oct. 10, 1978).
[454] Minimum Equipment List Requirements, 54 FR 3320 (Jan. 23, 1989).
[455] Minimum Equipment List Requirements, 56 FR 12311 (Mar. 22, 1991).

airplane. Review of the historical information for this rule reveals that the FAA's original intent was for § 135.179 to apply to "any civil aircraft," which includes powered-lift. As a result, the FAA proposes to make a technical amendment to § 135.179(b)(1) to reflect that intent.

Section 135.180 was implemented to require traffic alert and collision avoidance systems (TCAS) for turbine-powered airplanes that have a passenger seat configuration, excluding any pilot seat, of 10 to 30 seats. TCAS uses nearby aircraft's transponder signals to alert pilots to the danger of mid-air collisions. The FAA considered many factors when determining which part 135 airplanes would be required to be equipped with a TCAS.[456] These factors included the relative speed, size, and the number of passengers per airplane, as well as the fact that these types of airplanes can operate in the same high density terminal airspace as airplanes operating under part 121.[457] The FAA anticipates that certain powered-lift will have the same relative speed, size, and passenger-carrying capacity of the airplanes that were required to be equipped with TCAS. Additionally, the FAA anticipates that some powered-lift will have the ability to operate in the same airspace as other larger, high performance aircraft, including airplanes operating under part 121. To afford the same level of safety through the mitigation of potential mid-air collisions and their devastating effects on persons and property onboard or in the same airspace as powered-lift, the FAA is proposing in § 194.307(cc) that this section apply to powered-lift that have a passenger seat configuration, excluding any pilot seat, of 10 to 30 seats.

Powered-lift that are required to have TCAS will also be required to have the content specified in § 135.180(b) in the powered-lift's aircraft flight manual. This will ensure that the persons operating a powered-lift will have access to the appropriate

---

[456] Traffic Alert and Collision Avoidance System, 54 FR 951 (Jan. 10, 1989).
[457] Id. at 951.

procedures for the use of the TCAS equipment, proper flightcrew action with respect to the TCAS equipment, and an outline of all the input sources that must be operating for proper TCAS operation.

iv. Subpart D: VFR/IFR Operating Limitations and Weather Requirements

Subpart D prescribes operating limitations for VFR/IFR flight operations and associated weather requirements for operations under part 135. Section 135.203 provides the VFR minimum altitude requirements for airplanes and helicopters. The FAA established minimum altitudes in the Civil Air Regulations (CAR) to ensure that a pilot had sufficient altitude to enable safe maneuvering of the aircraft, especially when encountered with an emergency situation, while still ensuring the safety of persons and property on the surface. Different minimum altitudes for airplanes and helicopters exist because the FAA recognized that the special flight characteristics of a helicopter enable it to accomplish an emergency landing in a small space compared to an airplane. Additionally, the maneuverability of a helicopter permits it to make corrective actions in less distance than most airplanes; a helicopter is able to avoid obstacles at a closer range and land in much more confined areas. This enables a helicopter to be operated over congested areas at 300 feet above the surface without compromising safety of persons or property on the surface.

The FAA anticipates many powered-lift, other than necessary for takeoff and landing, in order to gain efficiencies in speed and range, will prefer to utilize lift provided by the wing for as long as practical. Since powered-lift will likely operate like an airplane in cruise flight, they will require more time and distance to correct their flightpath to avoid other aircraft and obstacles. Since a gliding aircraft requires more space to conduct a safe landing, a gliding powered-lift would require a higher altitude to provide the pilot more time to select an appropriate off-airport landing site. Unlike other aircraft

categories, powered-lift have to make a transition from flight on the rotors or other thrust devices to flight on the wing and vice versa in order to conduct takeoff and landing operations. The FAA expects the transition of a powered-lift from forward flight to vertical flight would not be instantaneous, requiring additional time, distance, and altitude that is unique from other categories of aircraft. Although some powered-lift may be capable of performing an emergency autorotation into a more confined space, the FAA anticipates that additional altitude would increase the chances of a successful outcome without undue hazard to persons or property on the surface. The FAA is proposing in § 194.307(dd) to apply the airplane minimum altitude requirements of § 135.203(a) to powered-lift. The FAA anticipates learning more about powered-lift operational capabilities and commonalities during the term of this SFAR.

Section 135.205 provides the visibility requirements for an airplane or helicopter operating under VFR in uncontrolled airspace. There is a wide range of powered-lift in development and the aircraft produced will have a wide range of performance capabilities. Since powered-lift will have the potential to fly at airspeeds higher than rotorcraft, the FAA anticipates a powered-lift pilot will need the additional visibility required for them to safely acquire other aircraft and obstacles and to make appropriate corrective actions. Additionally, a more conservative application of this rule is in the public's best interest and should apply to powered-lift until such time as the FAA has enough operational data to support reduced visibility requirements. Accordingly, the FAA proposes in § 194.307(ee) to require powered-lift operating under VFR in uncontrolled airspace to maintain the ceiling and visibility requirements detailed for airplanes under § 135.205(a).

Section 135.209 details that airplanes are required to have enough fuel supply under VFR considering wind and forecast weather conditions to reach the first point of intended landing at normal cruise fuel consumption and then fly after that point for 30

minutes. At night, this requirement increases to 45 minutes past the first point of intended landing. Helicopters must have enough fuel to fly to the first point of intended landing, considering wind and forecast weather conditions, and to fly after that for at least 20 minutes regardless of day or nighttime.

The FAA predicts that powered-lift will conduct cruise operations in configurations similar to airplanes while conducting takeoff and landing operations in a manner similar to helicopters. Because these aircraft will predominately use wing-borne flight during cruise similar to airplanes, the FAA anticipates that some powered-lift will have the potential to fly at higher altitudes and speeds. Additionally, some powered-lift may require more surface area to conduct a landing than a helicopter, thereby reducing the number of available unplanned landing sites, and would benefit from the additional fuel reserves required for airplanes. Therefore, the FAA proposes in § 194.307(ff) to require powered-lift to adhere to the fuel reserves set forth in § 135.209(a).

Section 135.221 provides the requirements for alternate airport weather minimums. Paragraph (a) requires, for an aircraft other than rotorcraft, that no person may designate an alternate airport unless the weather reports or forecasts indicate the weather conditions will be at or above authorized alternate airport landing minimums for that airport at the estimated time of arrival. Authorized landing minimums for these aircraft are specified in Operations Specification C055. The FAA anticipates powered-lift will spend a majority of their flight time in wing-borne flight and cruise at higher altitudes with the potential for higher speeds than rotorcraft. As a result, the FAA determined the provisions contained in § 135.221(a) applicable to aircraft would be best suited for powered-lift until such time the FAA receives data that supports the application of the rotorcraft alternate airport weather minimums as contained in § 135.221(b). Accordingly, this provision applies to powered-lift as drafted and the FAA does not propose to apply the exception for rotorcraft in §135.221(b).

Section 135.223(a) requires aircraft to carry a 45-minute fuel reserve and helicopters to carry a 30-minute fuel reserve. The 30-minute fuel reserve requirement for helicopters was initially granted under SFAR 29.[458] Operations under SFAR 29 gave the FAA insight to make a safety and risk analysis enabling SFAR 29 to be codified in §§ 91.167 and 135.223. The final rule language for § 91.167 (and similarly for § 135.223) noted that the FAA had gained sufficient experience with operations conducted under SFAR 29 to justify a reduction for minimum fuel reserve requirements for helicopters.[459] The FAA does not have sufficient experience to grant relief for powered-lift fuel requirements at this time, and consistent with the phased approach taken to provide additional fuel reserve relief for helicopters, will retain the 45-minute fuel reserve requirement and not apply the less restrictive helicopter minimum set forth in § 135.223(a)(3). The FAA may reevaluate the 45-minute fuel reserve requirement once it has sufficient experience under this SFAR.

Section 135.225 contains requirements generally applicable to aircraft performing instrument approaches to airports. Section 135.225(e) requires a PIC of a turbine powered airplane who has not served at least 100 hours as PIC in that type of airplane to increase the Minimum Descent Altitude (MDA) or Decision Altitude/ Decision Height (DA/DH) and visibility landing minimums by 100 feet and ½ mile respectively. This requirement has existed in part 135 since its original codification in 1964.[460] This requirement was initially codified into 14 CFR parts 40, 41, and 42 with the publication of the FAA's final rule on April 22, 1961.[461] The FAA asserted that the safe execution of an instrument

---

[458] The FAA promulgated SFAR No. 29 in 1975 to allow the Administrator to issue approvals for rotorcraft IFR operations on an interim basis pending the conclusion of a study to determine whether the FAA should establish a "limited" IFR category for these rotorcraft, including flight characteristics and equipment requirements, operating procedures and limitations, flight crew requirements, and training requirements. See FAA Study of Limited IFR Operations in Rotorcraft, 40 FR 2420 (Jan. 13, 1975).

[459] Rotorcraft Regulatory Review Program Amendment No. 5; Operations and Maintenance, 51 FR 40692 (Nov. 7, 1986).

[460] Miscellaneous Amendments, 29 FR 2988 (Mar. 5, 1964).

[461] IFR Landing Minimums for Pilots With Less than 100 Hours as Pilot in Command in a Particular Type of Airplane, 26 FR 3460 (Apr. 22, 1961).

approach to the lowest minimums requires the highest degree of pilot familiarity with the airplane, its controls, instruments, and performance characteristics, and that 100 hours of experience in a new type of airplane as PIC in air carrier or commercial operations is necessary in order to achieve this degree of familiarity.

Although this requirement was implemented more than 61 years ago, this familiarity requirement is still relevant to operations conducted in airplanes today. The FAA ascertains that PICs of powered-lift should also possess the highest degree of familiarity with their aircraft, its controls, instruments, and performance requirements. The FAA also determined that powered-lift's additional complexity required as the aircraft transitions from winged to vertical flight during a critical phase of flight requires that PICs of all powered-lift have the increased MDA or DA/DH and visibility landing minimums as required by § 135.225(e). To maintain the level of safety currently afforded to persons and property in the air and on the ground, the FAA proposes in § 194.307(gg) to require that the requirements of § 135.225(e) apply to PICs of any powered-lift.

Section 135.227 addresses the operating limitations in icing conditions for airplanes and helicopters. Paragraph (a), which applies to "aircraft" including powered-lift, states "no pilot may take off an aircraft that has frost, ice, or snow adhering to any rotor blade, propeller, windshield, stabilizing or control surface; to a powerplant installation; or to an airspeed, altimeter, rate of climb, flight attitude instrument system, or wing, except that takeoffs may be made with frost under the wing in the area of the fuel tanks if authorized by the FAA." Section 135.227(a) applies to all aircraft and powered-lift must comply with those requirements as written.

Paragraph (b) applies to airplane operations and requires certificate holders to ensure their pilots receive the training required by § 135.341 when the conditions are such that frost, ice, or snow may reasonably be expected to adhere to the airplane, if the

certificate holder authorizes takeoffs in ground icing conditions.[462] This paragraph was included in the Training and Checking in Ground Icing Conditions proposed rule. The FAA promulgated this rule in 1993 in response to part 135 accidents caused by pilots beginning a takeoff with contamination adhering to critical airplane surfaces.[463] The NPRM cited a common thread throughout the accidents and incidents of the pilot's apparent lack of awareness of the potential hazard from even small amounts of frost, ice, or snow on the airplane wings and controls surfaces. Paragraph (b) does not allow a certificate holder to authorize an airplane to take off anytime conditions are such that frost, ice, or snow may reasonably be expected to adhere to the airplane unless one of the following requirements are met: (1) A pretakeoff contamination check established by the certificate holder and approved by the FAA for the specific airplane type has been completed within 5 minutes prior to beginning the takeoff—this pretakeoff contamination check is a check to ensure the wings and control surfaces are free of frost, ice, or snow; (2) the certificate holder has an approved alternative procedure which will determine the airplane is free of frost, ice, or snow; or (3) the certificate holder has an approved deicing/anti-icing program meeting the requirements of § 121.629.

The 1993 preamble states that the FAA's goal in this rulemaking was twofold. First, as provided in part 121, to ensure pilots will be made fully aware, through training, of the dangers involved in beginning takeoff with contamination adhering to the airplane.[464] Second, to require pilots to accomplish one or more checks (pretakeoff and/or pretakeoff contamination) prior to beginning takeoff. Requiring that a pretakeoff

---

[462] Section 135.227 references training required by § 135.341. Section 135.341(b) requires the training program for part 135 operators to include ground training for initial, transition, and upgrade training. Section 135.345 specifies the required content of initial, transition, and upgrade ground training. Specifically, § 135.345(b)(6)(iv) requires training on operating during ground icing conditions (i.e., any time conditions are such that frost, ice, or snow may reasonably be expected to adhere to the airplane), if the certificate holder expects to authorize takeoffs in those conditions.

[463] Training and Checking in Ground Icing Conditions, 58 FR 49164 (Sept. 21, 1993).
[464] Id. at 49166.

contamination check is completed within 5 minutes prior to beginning a takeoff is intended to provide an equivalent level of safety to § 121.629. Under paragraph (b)(2) of §135.227, the FAA allows certificate holders to use an approved alternative procedure to ensure their airplanes are free of frost, ice, or snow. The FAA asserted in the preamble that the option to use an approved alternative procedure was included to permit certificate holders to develop alternative check procedures in lieu of the pretakeoff contamination check. To ensure that any alternative check procedures will provide an adequate level of safety, these procedures require FAA approval prior to their use by the certificate holder. These procedures must be specifically designed for the type of aircraft and the type of operations in which they would be used.

The FAA anticipates that some certificate holders operating powered-lift will desire the ability to conduct takeoffs when the conditions are such that frost, ice, or snow may reasonably be expected to adhere to aircraft surfaces, provided the pilot has completed all applicable training as required by § 135.341 and they are able to meet one of the requirements outlined in paragraphs (b)(1) through (3). Therefore, the FAA proposes in the SFAR to apply these options to certificate holders operating powered-lift.[465] In addition to wings and control surfaces, powered-lift may have other surfaces that are negatively impacted by frost, ice, or snow adhering to those surfaces, such as rotor blades. These other surfaces are considered critical surfaces, which the manufacturer will identify during certification, and which will be outlined in the Aircraft Flight Manual for that aircraft. Any frost, ice, or snow adhering to a "critical surface" could have an adverse impact on the aircraft's ability to operate safely. The FAA proposes that under the procedure referenced in paragraph (b)(1), or any approved alternative procedures referenced in paragraph (b)(2), a powered-lift's wings, control

[465] See section V.J of this preamble for a corresponding proposal to apply the initial, transition, and upgrade ground training requirements for operations in ground icing conditions, specified in § 135.345(b)(6)(iv), to powered-lift pilots if the certificate authorizes takeoffs in ground icing conditions.

surfaces, and other critical surfaces are determined to be free of frost, ice, or snow. This will ensure that powered-lift are operated at the highest level of safety during ground icing conditions. Thus, the FAA proposes in § 194.307(hh) that paragraph (b) apply to certificate holders operating powered-lift when either paragraph (hh)(1), (2), or (3) is met.

Section 135.227(c) includes the regulatory requirements for flight into icing conditions, and it specifies that no pilot may fly under IFR into known or forecast light or moderate icing conditions or under VFR into known light or moderate icing conditions unless certain conditions are met. Section 135.227(c)(1) requires the "aircraft" to have functioning deicing or anti-icing equipment protecting each rotor blade, propeller, windshield, wing, stabilizing or control surface, and each airspeed, altimeter, rate of climb, or flight attitude instrument system. The requirement applies to all aircraft; accordingly, any powered-lift that intends to fly into the icing conditions specified must have functioning deicing or anti-icing equipment.

Section 135.227(c)(2) and (3) are airplane-specific. The FAA will not apply these paragraphs to powered-lift because paragraph (d)—which applies to helicopters—serves the same purpose as paragraph (c) by allowing flight into known or forecast light or moderate icing conditions, discussed previously in further detail in section VI.D.1.iii of this preamble.

Section 135.227(e) states no pilot may fly an aircraft into known or forecast severe icing conditions unless that aircraft is an airplane that has the ice protection provisions that meet section 34 of appendix A, or those airplanes certificated under the airplane transport category type certification. This paragraph is specific to airplanes and references airplane certification requirements that airplanes must meet to operate in known or forecast severe icing conditions. Severe icing is defined in Advisory Circular

91-74B[466] as the rate of ice accumulation is such that ice protection systems fail to remove the accumulation of ice and accumulation occurs in areas not normally prone to icing, such as aft of protected surfaces and other areas identified by the manufacturer. Due to the novel design of powered-lift, the FAA lacks the research, operational experience, and certification criteria for authorizing operation of these aircraft in severe icing conditions. Until the FAA has sufficient data to authorize powered-lift to operate in known or forecast severe icing conditions, the FAA does not propose to allow powered-lift to fly into known or forecast severe icing conditions as provided in § 135.227(e). The FAA welcomes comments including data regarding this proposal.

v. Subpart I: Airplane Performance Operating Limitations

Subpart I outlines the airplane performance operating limitations applicable to large transport category, large nontransport category, small transport category, and small nontransport category airplanes with different types of powerplants. Although this subpart is airplane specific, the FAA acknowledges in this SFAR that some powered-lift may fit the definition of large aircraft, which is more than 12,500 pounds, while others will be considered small aircraft, which are 12,500 pounds or less. The FAA anticipates some powered-lift could operate similar to an airplane during takeoff and landing and will routinely operate similar to an airplane during horizontal flight. In those cases, the powered-lift will be supported in flight by the dynamic reaction of the air against their wings (termed wing-borne flight), as explained in section VI.A.

The FAA anticipates that some powered-lift will only be able to conduct VTOL operations, while others may have the ability to conduct a takeoff or landing that depends on wing-borne lift—similar to an airplane. For those powered-lift, some of the requirements of subpart I would be applicable, and those that the FAA has determined would be applicable are discussed in this section. Accordingly, for powered-lift that can

[466] Available at https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_91-74B.pdf.

conduct takeoff and landings using wing-borne lift, the performance data will be published in the aircraft flight manual and will contain items such as: takeoff roll, takeoff distance, and landing distance required. This will enable a pilot of a powered-lift to determine that an adequate area is available to enable a safe takeoff or landing. The FAA asserts that persons or property being transported on powered-lift meeting the size and certification standards of this subpart should be afforded the safety requirements of this subpart that is currently afforded to those transported on airplanes.

This subpart also specifies requirements for transport category airplanes. This SFAR will propose applicability of those transport category requirements to large powered-lift, recognizing that the FAA has not yet published a transport category certification standard for powered-lift. As previously discussed in section IV.A of this preamble, during the certification the FAA develops the certification criteria for each individual powered-lift design. Due to the novel designs of powered-lift and the varying capabilities of those aircraft, this could require using a combination of the aircraft certification standards from the various sections of parts 23, 25, 27, and 29.

Section 135.361 is an applicability regulation for airplane performance operating limitations. This section also defines in paragraphs (b) and (c) respectively, for the purposes of this subpart, the terms “effective length of the runway” and “obstruction clearance plane.” The FAA proposes in § 194.307(ii) that the sections of subpart I apply to powered-lift as delineated in each section, regardless of powerplant type.

Section 135.363(a) through (e) contain a general outline of which sections of subpart I apply to certain airplanes considering factors such as: the size, type of powerplant, and certification basis for the airplane. The FAA does not anticipate that there will be a large powered-lift produced with a reciprocating engine, therefore paragraph (a) will not be applicable. The FAA proposes in § 194.307(jj) that when a

powered-lift meets the criteria established in paragraphs (b) through (e), regardless of powerplant type, then the referenced regulatory sections will be applicable.

Section 135.363(f) requires that the performance data in the Airplane Flight Manual must be used in determining compliance with §§ 135.365 through 135.387. It also contains a provision to allow the interpolation and for computing the effects of changes in specific variables, as long as those calculations are as accurate as the results of direct tests. Although this section specifies an Airplane Flight Manual, the FAA asserts that any powered-lift that meets the threshold, therefore requiring compliance as detailed in §§ 135.365 through 135.387, the powered-lift aircraft flight manual will contain any applicable performance data. Additionally, the FAA expects that the interpolation and computation that is permitted in § 135.363(f) could be accomplished for powered-lift without any degradation of safety, just as it is allowed for airplanes. Therefore, the FAA proposes in § 194.307(kk) that if a powered-lift is required to be in compliance with a section contained in §§ 135.365 through 135.387, then the provisions of § 135.363(f) will apply.

Section 135.364 sets the requirement for a certificate holder operating an airplane, other than an all-cargo airplane with more than two engines, on a planned route that exceeds 180 minutes flying time (at the one-engine-inoperative cruise speed under standard conditions in still air) from an Adequate Airport outside the continental U.S. unless the operation is approved by the FAA in accordance with appendix G to part 135, Extended Operations (ETOPS). Although ETOPS is currently applicable only to airplanes, the FAA anticipates that at some point a powered-lift could be designed with the range capability where ETOPS operations could be applicable, but likely not during the term of this SFAR. Accordingly, the FAA will not propose to amend part 135, appendix G, at this time or apply this regulation to powered-lift in this SFAR.

Section 135.379(a) requires that no person operating a turbine engine powered large transport category airplane may take off that airplane at a weight greater than that listed in the Airplane Flight Manual. The calculation for determining that takeoff weight must consider the elevation of the airport and the ambient temperature existing at the time of takeoff. This regulation provides important performance criteria to ensure that operators of an aircraft consider the effects of altitude and temperature when determining the maximum allowable takeoff weight. This is an important consideration because aircraft performance is reduced as the altitude and the temperature is increased. A takeoff in any aircraft should not be attempted, including in powered-lift, if the weight of the aircraft is greater than that listed in the Aircraft Flight Manual. These computations must include the elevation of take-off and the ambient temperature at the time of takeoff, which would also be applicable to large powered-lift. Section 135.379(b) is not applicable to powered-lift because of the date restrictions on certification in that paragraph.

Section 135.379(c) sets requirements for turbine engine powered large transport category airplanes certificated after August 29, 1959. It requires that an airplane cannot takeoff at a weight greater than that listed in the Airplane Flight Manual and lists specific performance requirements, such as the takeoff run must not be greater than the length of the runway, accelerate-stop distances, and required takeoff distance. This ensures that the airplane does not require more distance for its takeoff run than the available runway length, that the airplane can stop during an aborted takeoff on either the runway or any available stopway, and that there are no obstacles in the flightpath during the initial portion of a takeoff and climb. These considerations would also be applicable to large powered-lift utilizing wing-borne lift for takeoff.

Section 135.379(d) requires that an airplane cannot takeoff at a weight greater than that listed in the Airplane Flight Manual and lists specific performance requirements

for obstacle clearance in the takeoff path (for airplanes certificated after August 26, 1957, but before October 1, 1958) and takeoff flight path (for airplanes certificated after September 30, 1958). This ensures that the airplane will clear all obstacles within the airport boundaries during takeoff operations. This restriction would also be applicable to large powered-lift.

Section 135.379(e) requires certain corrections to be considered when determining maximum takeoff weights, minimum distances, and flight paths under § 135.379(a) through (d). These corrections are runway used and gradient, airport elevation, ambient temperature, wind component. Additionally, some airplane flight manuals require corrections for wet runways, and when provided in the airplane flight manual, wet runways with grooved or porous friction course surfaces. These corrections are made to ensure that operators take all relevant performance factors related to takeoff operations into account to ensure that the airplane safely remains within its weight limitations for a particular takeoff. This provision would also be relevant to large powered-lift determining maximum takeoff weights, minimum distances, and flight paths and that utilize wing-borne lift for takeoff.

Section 135.379(f) sets two assumptions when calculating takeoff performance: the airplane is not banked before reaching a height of 50 feet, and after that the maximum bank is not more than 15 degrees. This ensures the airplane is operated at its maximum performance capability during the initial phase of takeoff and climb. This provision would also be applicable to powered-lift calculating takeoff performance using wing-borne lift.

The FAA proposes in § 194.307(ll) that paragraphs (a) and (d) of § 135.379 apply to large powered-lift. In addition, the FAA proposes in § 194.307(mm) that paragraphs (c), (e), and (f) of § 135.379 apply to large powered-lift and that utilize wing-borne lift during takeoff and have the takeoff performance information contained in the aircraft

flight manual. The FAA finds that the expected commonalities between transport category airplane and large powered-lift operations warrant application of these provisions to large powered-lift. The accelerate-stop distance set forth in § 135.379(c)(1) must either meet § 25.109 or such airworthiness criteria as the FAA may find provides an equivalent level of safety in accordance with § 21.17(b).

Section 135.381(a) specifies that a person operating a turbine engine powered large transport category airplane must takeoff at a weight, allowing for normal consumption of fuel and oil, which will ensure that the airplane with one engine inoperative will clear all terrain and obstructions within its flightpath, which also includes a horizontal and vertical safety area. Paragraph (b) lists six assumptions that must be considered when computing the net flight path and required horizontal and vertical safety areas required by § 135.381(a)(2). Large powered-lift will conduct en-route operations similar to transport category airplanes and this important safety criteria should apply if one engine were to become inoperative thereby ensuring they remain clear of all terrain and obstructions within their flightpath, including the required horizontal and vertical safety areas. The FAA proposes in §194.307(nn) that this section be applicable to large powered-lift.

Section 135.383(c) specifies that a person operating a turbine engine powered large transport category airplane on an intended route will ensure that the airplane is no more than 90 minutes away from an alternate airport, or with two engines inoperative will clear all terrain and obstructions within its flightpath, which also includes a horizontal and vertical safety area. Large powered-lift will conduct en route operations similar to airplanes and this important safety criteria should apply if two engines were to become inoperative thereby ensuring they remain clear of all terrain and obstructions within their flightpath, including the required horizontal and vertical safety areas. Additionally, this section contains assumptions that must be considered when computing

the net flight path, required horizontal and vertical safety areas and fuel requirements, as listed in § 135.383(c)(2). Having alternate airports planned along the route is essential for en route operations. Therefore, the FAA proposes in § 194.307(oo) that both § 135.383(c)(1) and (2) apply to large powered-lift.

Section 135.385(a) stipulates that no person operating a turbine engine powered large transport category airplane may take off at a weight that (allowing for normal consumption of fuel and oil in flight to the destination or alternate airport) if the weight of the airplane on arrival would exceed the landing weight as contained in the Airplane Flight Manual taking in consideration the elevation of the destination or alternate airport and the ambient temperature anticipated at the time of landing. This regulation establishes important pre-takeoff planning criteria that must consider the maximum landing weight at the destination or alternate airport to ensure that the airplane is at a weight that will allow a landing that is within the performance capabilities of that aircraft. This regulation does not allow a turbine engine powered large transport category airplane to takeoff at a weight that would cause it to exceed the maximum landing weight at either the destination or alternate airport. This section is intended to ensure an airplane will not arrive overweight for landing, and the subsequent paragraphs (b) through (f) detail what factors must be applied when determining the required landing distances, and these considerations are equally applicable to large powered-lift. Therefore, the FAA proposes in § 194.307(pp) that paragraph (a) be applicable to large powered-lift.

Section 135.385(b) specifies that in order for a person to conduct a takeoff in a turbine engine powered large transport category airplane, the airplane weight on arrival, allowing for normal consumption of fuel and oil, must allow a full stop landing at the intended destination airport within 60 percent of the effective length of each runway. Additionally, this paragraph provides some parameters that must be considered when calculating the maximum landing weight, such as: the airplane being landed in still air on

the most favorable runway and in the most favorable direction, the airplane being landed on the most suitable runway taking into consideration the probable wind velocity and direction, the ground handling characteristics of the airplane, and considering other conditions such as landing aids and terrain. This rule provides for a 40 percent safety margin to help ensure that an airplane can safely land and prevents a person from attempting to operate into runways where there is no margin of error, which is also important for large powered-lift that utilize wing-borne lift during landing.

Therefore, the FAA proposes in § 194.307(qq) the paragraph (b) provision of 60 percent of the effective runway length be applicable to large powered-lift that utilize wing-borne lift during landing and have landing performance information in the aircraft flight manual.

Paragraphs (c) and (e) of § 135.385 provide that a turbopropeller- or turbojet-powered airplane, respectively, that would be prohibited from conducting a takeoff because it could not be landed on the most suitable runway considering the probable wind velocity and direction and the ground handling characteristics of the airplane, and considering other conditions such as landing aids and terrain, may takeoff if an alternate airport is selected. Under paragraph (c), the alternate airport must meet all of the requirements of § 135.385, and under paragraph (e), the alternate airport must meet all the requirements of paragraph (b) of § 135.385. Additionally, paragraph (c) allows for using 70 percent of the effective length of the runway at the alternate airport to determine suitability of that runway's length. The FAA does not have sufficient operational data regarding powered-lift that conduct landings that depend on wing-borne lift to support proposing this provision to be applied to powered-lift at this time. Accordingly, the FAA has determined that the most conservative application of this provision is appropriate and § 135.385(c) will not apply to powered-lift.

Notwithstanding the inapplicability of paragraph (c), the FAA proposes in § 194.307(qq) that paragraph (e) apply to large powered-lift that conduct landing operations that depend on wing-borne lift and have that landing performance information contained in the aircraft flight manual.

Section 135.385(d) requires that, unless approved and included in the airplane flight manual, a large transport category turbojet airplane must add an additional 15 percent margin onto the landing distance calculated per § 135.385(b) when the destination may be wet or slippery at the estimated time of arrival. Therefore, the FAA proposes in § 194.307(qq) that this paragraph be applicable to large powered-lift that utilize wing-borne lift during landing and has landing performance information contained in the aircraft flight manual.

Section 135.385(f) provides an option to those "eligible on-demand operators" which permits an operator operating a turbine engine powered large transport category airplane to conduct a takeoff on an on-demand flight if the operation is permitted by an approved Destination Airport Analysis in that operator's manual and certain conditions are also met. Those conditions are that to determine the landing weight, the following are assumed: the airplane is landed on the most favorable runway and direction, in still air, and it is landed on the most suitable runway considering the probable wind velocity, direction, the ground handling characteristics of the airplane, and other conditions such as landing aids and terrain. The operator must also have an approved Destination Airport Analysis contained in their operations manual. The eligible on-demand operator calculates the required runway distance at 80 percent of the effective length of the runway. Therefore, the FAA proposes in § 194.307(qq) this paragraph be applicable to large powered-lift that utilize wing-borne lift during landing and has landing performance information contained in the aircraft flight manual.

Section 135.387(a) and (b) sets the requirements for the required length of the runway when designating an alternate airport. This section requires the selected alternate airport must allow the airplane to be brought to a full stop landing based on the weight of the airplane expected at the time of arrival at the alternate airport. Turbojet airplanes require that distance to be calculated at 60 percent of the effective length of the runway, turbopropeller airplanes require 70 percent, and eligible on-demand operators require 80 percent. Therefore, the FAA proposes in § 194.307(rr) that paragraphs (a) and, for eligible on-demand operators, paragraph (b), be applicable to large powered-lift that utilize wing-borne lift during landing and has landing performance information contained in the aircraft flight manual.

Sections 135.389, 135.391, 135.393, and 135.397 all contain takeoff and landing limitations for large nontransport category airplanes. As described in the discussion in section IV.A., the FAA determined that for purposes of this proposal, regulations applicable to large transport category airplanes would be applicable to large powered-lift, because the agency has not yet established a transport category standard for powered-lift. Accordingly, application of these provisions is not necessary considering the previous discussion regarding the applicability of the provisions in this subpart regarding large transport category airplanes.

Section 135.397(a) and (b) outline the performance requirements for small transport category airplanes. This section requires compliance with weight, takeoff, and landing limitations as contained in other sections of subpart I. This regulation applies to airplanes that are reciprocating and turbine engine powered, and small, which means 12,500 pounds or less, but yet are still certificated to the safety standards of transport category certification because they have a passenger seating configuration of more than 19 seats. Section 135.397(a) is applicable to reciprocating engine powered airplanes, and the FAA has previously asserted in this document that the sections referenced in

paragraph (a) would not be applicable to powered-lift. Therefore, the FAA proposes in § 194.307(ss) that only paragraph (b) be applicable for small powered-lift that have a passenger seating configuration of more than 19 seats, that utilize wing-borne lift during takeoff and landing, and have takeoff and landing performance information contained in the aircraft flight manual.

E. Part 136 Rules for Powered-Lift

Enabling powered-lift to be used in commercial air tours is an appropriate step in the safe integration of such aircraft. As discussed in section III, in the Update to Air Carrier Definitions NPRM, the FAA proposed expanding the definitions and applicability of part 136 to accommodate powered-lift and to ensure that the more stringent safety risk mitigations afforded in that part would apply to powered-lift that are anticipated to be used to conduct commercial air tours.[467] The Update to Air Carrier Definitions NPRM also proposed amending references of "helicopter" to "rotorcraft" to ensure that the part 136 safety standards apply to other types of aircraft that may conduct commercial air tours. Consequently, in this SFAR, except when referring to existing section titles or explaining the current regulatory text, the FAA uses the term "rotorcraft" for part 136 discussion rather than "helicopters". While the Update to Air Carrier Definitions NPRM proposed amendments to certain sections of part 136, to the extent that the proposal affects powered-lift, it is consistent with the proposed changes offered in this NPRM. The amendments offered in both proposals will be reconciled before each rule is finalized.

In this proposed SFAR, the FAA addresses the operational requirements within part 136. The FAA has analyzed each of the limitations and requirements of part 136, subpart A and Appendix A, and determined the requirements of part 136 that are applicable to all aircraft are appropriate for operations of powered-lift. Additionally, in §

[467] See Update to Air Carrier Definitions NPRM, 87 FR 74995 (Dec. 7, 2022).

194.310 of this SFAR, the FAA proposes applying certain requirements of part 136 that are specific to helicopters while giving consideration to powered-lift that may conduct commercial air tours in the wing-borne flight mode to ensure clarity and address the risks associated with enabling the operation of commercial air tours in powered-lift.

1. Suitable Landing Area for Helicopters

This proposed rule would apply the definition of the term "suitable landing area for helicopters," codified at § 136.1, to powered-lift. The current definition states such an area is one that provides the operator reasonable capability to land without damage to equipment or injury to persons. It further provides that such areas must be site-specific, designated by the operator, and accepted by the FAA. In the Update to Air Carrier Definitions NPRM, the FAA proposed amending this definition to apply more broadly to rotorcraft instead of only helicopters to ensure those aircraft are subject to the safety standards of part 136. It also proposed removing reference to "damage to equipment" to instead focus on preventing "serious injury to persons".

The FAA's purpose in applying the definition for suitable landing areas for rotorcraft to powered-lift is to ensure powered-lift operators designate potential landing areas in advance of an operation, as such designation reduces the risk of an accident because the PIC is aware of potential sites for emergency landings. Further, given the vertical takeoff and landing capabilities of powered-lift, they are capable of landing at locations that would also accommodate rotorcraft. The FAA expects operators conducting commercial air tours in powered-lift to be able to designate a site-specific landing area that, when used, would not cause serious injury to persons.

2. Life Preservers for Over Water

Section 136.9 requires the operator and PIC of commercial air tours over water beyond the shoreline to ensure each occupant is wearing a life preserver from before takeoff until the flight is no longer over water. The regulation provides relief from that

requirement under the following circumstances as long as the operator and PIC ensure that a life preserver is readily available and easily accessible to each occupant: if the aircraft is equipped with floats; if the airplane is within power-off gliding distance to the shoreline for the duration of the time that flight is over water; or if the aircraft is a multi-engine aircraft that can be operated with the critical engine inoperative at a weight that will allow it to climb, at least 50 feet a minute, at an altitude of 1,000 feet above the surface, as provided in the airplane or rotorcraft flight manual. No life preserver is required if the overwater operation is necessary for takeoff or landing.

The preamble to part 136 states that life preservers discussed in this rule apply to both helicopters and airplanes when operating a commercial air tour over water.[468] The rule also specifies when life preservers are required to be available and when they are required to be worn by all occupants. In the Update to Air Carrier Definitions NPRM, the FAA proposed replacing "Airplane Flight Manual" under § 136.9(b)(3) with "Aircraft Flight Manual" to provide more flexibility for other aircraft conducting commercial air tours. If that NPRM is adopted as final, this reference would also apply to a powered-lift's flight manual.

The exceptions found in § 136.9(b)(1), which applies to aircraft equipped with floats, and in paragraph (b)(3), for multiengine aircraft, currently apply to powered-lift because powered-lift are considered "aircraft." The FAA proposes to also apply § 136.9(b)(2) to powered-lift. Paragraph (b)(2) would apply when a powered-lift is operating in the wing-borne flight mode within the power-off gliding distance to the shoreline. When a powered-lift is operating in the wing-borne flight mode, it more closely aligns with the performance capabilities of an airplane over water and therefore would have the ability to glide to shore. Therefore, the FAA proposes that paragraph (b)(2) apply to powered-lift, thereby excepting the operator and PIC of a commercial air

[468] See National Air Tour Safety Standards; Final Rule, 72 FR 6884 (Feb. 13, 2007).

tour over water beyond the shoreline from requiring each occupant to wear a life preserver as long as the powered-lift is within power-off gliding distance of the shoreline while the aircraft is over water and in wing-borne flight mode.

3. Helicopter Floats Over Water

Section 136.11 currently permits single-engine helicopters in commercial air tours to operate over water beyond the shoreline only when they are equipped with fixed floats or an inflatable flotation system adequate to accomplish a safe emergency ditching. Similarly, multiengine helicopters that cannot be operated with the critical engine inoperative at a weight that will allow it to climb at least 50 feet a minute at an altitude of 1,000 feet above the surface with an engine inoperative as provided in the Rotorcraft Flight Manual (RFM) also must be equipped with fixed floats or an inflatable flotation system. Those helicopters that are equipped with flotation systems must have an activation switch for the flotation system on one of the primary flight controls and the system must be armed when the helicopter is over water and flying at a speed that does not exceed the maximum speed prescribed in the RFM. These requirements, however, do not apply to operations over water during the takeoff and landing portions of flight or to operations within the power-off gliding distance to the shoreline for the duration of the flight provided each occupant is wearing a life preserver from before takeoff until the aircraft is no longer over water. In the Update to Air Carrier Definitions NPRM, the FAA proposed expanding § 136.11 to rotorcraft and referencing "aircraft flight manual" instead of "Rotorcraft Flight Manual." In addition, the FAA proposed clarifying in paragraph (b)(2) that the flotation system must be armed when the rotorcraft is over water "beyond the shoreline" and proposed removing paragraph (d) because the lead-time date of September 5, 2008, is no longer relevant.

Extending the aforementioned requirements of §136.11 to commercial air tour operations using powered-lift when the aircraft is operating in the vertical-lift flight mode

under part 136 would mitigate the risks associated with emergency water landings. Therefore, § 136.11(a)(2), (b), and (c) apply to powered-lift. Section 136.11(a)(1) would not apply to powered-lift because, as stated earlier, all powered-lift coming to market are currently multiengine, not single-engine.[469] In addition, since the FAA anticipates powered-lift may be designed to either auto-rotate or glide, the FAA proposes to apply this regulation to powered-lift that are conducting air tour operations in the vertical-lift flight mode beyond the auto-rotational distance or gliding distance from the shoreline. While these terms may not seem appropriate for all powered-lift, the intent is to capture engine out safe landing distances. This will ensure the power off landing capabilities of powered-lift, regardless if they auto-rotate or glide, are covered by the regulation. The FAA determined the risks that are present in rotorcraft commercial air tours would be similar to powered-lift operating in the vertical-lift flight mode. In this regard, powered-lift can create lift in the same manner as rotorcraft, and the FAA expects they could be capable of performing a stationary hover in or out of ground effect. Moreover, when conducting air tour operations, powered-lift will likely be used in a manner similar to rotorcraft. Because powered-lift and rotorcraft may have similar flight profiles in air tour operations, they share common risks during those operations. The risks that arise with losing power in an aircraft during air tour operations over water are serious. As a result, flotation equipment is an appropriate requirement to mitigate these risks.

In regard to the above-mentioned justification and to increase the occupants' chances of survival in the event of an unplanned landing over water, the FAA is proposing to apply this requirement to powered-lift operations that occur under part 136 when operating in the vertical-lift flight mode.

---

[469] See section VI.A for discussion regarding multiengine powered-lift.

4. Helicopter Performance Plans and Operations

This proposed rule would apply § 136.13 to powered-lift. Section 136.13(a) currently requires commercial air tour operators to complete helicopter performance plans before each operation that will occur under part 136.[470] The PIC of the operation must review the plan for accuracy and comply with it for each flight. Such performance plans are a key component of mitigating the risk of commercial air tour operations, as they require the PIC to be prepared to respond to unforeseen events. In the Update to Air Carrier Definitions NPRM, the FAA proposed replacing "helicopter" with "rotorcraft" and "Rotorcraft Flight Manual" with "aircraft flight manual" to broaden the scope of the regulation.

The FAA promulgated the requirement for performance plans in 2007 based on the need for operators to conduct preflight planning and for pilots to have operational knowledge that is essential to the aircraft being flown in commercial, passenger-carrying operations. In particular, the FAA emphasized the importance of the height/velocity (H/V) diagram component of performance plans.[471] This same rationale could apply to commercial air tours that occur in powered-lift that have height velocity information or performance criteria with avoidance areas related to the transitions that occur between the vertical-lift and wing-borne mode. The FAA realizes that some powered-lift may only contain height-velocity or flight mode transition information, whereas some may contain both types of information in their aircraft flight manual. Operators will likely take advantage of the vertical takeoff, out of ground effect hovering capabilities, and out of ground effect slow flight capabilities of powered-lift at speeds that do not exceed effective translational lift airspeed when conducting operations under part 136.

---

[470] This requirement also applies to operations that occur under §§ 91.146 ("Passenger-carrying flights for the benefit of a charitable, non-profit, or community event") and 91.147 ("Passenger carrying flights for compensation or hire").

[471] National Air Tour Safety Standards, Final Rule, 72 FR 6884 (Feb. 13, 2007).

In the 2007 National Air Tour Safety Standards rule, the FAA stated that extended operation within the "avoid" portion of the height/velocity diagram increases the exposure to the risk of not being able to execute successfully an autorotation landing in the event of an engine failure, or in the case of multiengine helicopters, a safe one-engine inoperative landing. Therefore, aviation safety requires that commercial air tour operators not only plan, but also operate in accordance with the performance plan.[472] As a result, operators should be aware of H/V diagrams or engine out performance capability as applicable to their aircraft. Such awareness and planning are essential in reducing the risk of accidents.

Consequently, the FAA proposes to apply § 136.13 to powered-lift in order to provide an equivalent level of safety for commercial air tour operators and PICs using powered-lift to conduct commercial air tours or to conduct operations under § 91.146 or § 91.147.

5. Commercial Air Tours in Hawaii

This rule would also apply operating provisions contained in appendix A to part 136—Special Operating Rules for Air Tour Operators in the State of Hawaii—to powered-lift operations. The safety standards in part 136 are specific to commercial air tours and provide additional risk mitigations for those operations. As stated in the National Air Tour Safety Standards final rule, the FAA determined that minimum, mandatory safety standards directly relate to a decrease in the occurrence of accidents.[473] Therefore, in the Update to Air Carrier Definitions NPRM, the FAA replaced references to "helicopter" with "rotorcraft" in appendix A to expand the scope of applicability and to ensure air tour operations would not pose additional safety risks, and it also amended the applicability of appendix A to include powered-lift. The NPRM also proposed to amend

[472] National Air Tour Safety Standards; Final Rule, 72 FR 6883 at 6912 (Feb. 13, 2007).
[473] Id. at 6889.

the references to RFMs currently within section 4 of the appendix to instead read "aircraft flight manual" in the regulatory text. Subjecting powered-lift to these safety standards is appropriate for the same reasons.

Appendix A previously existed as SFAR No. 71.[474] In 2007, when the FAA last amended part 136, the FAA explained that many air tour operations occur in Hawaii and the Grand Canyon, and that the rules of SFAR No. 71 had improved safety.[475] The FAA explained that more restrictive altitude standards apply to air tours in Hawaii because a large number of commercial air tour flights occur "in a relatively small amount of airspace" and other demonstrated hazards exist.[476] As one commenter noted, many Hawaiian operations occur over large bodies of water and water conditions in Hawaii are "rough, unlike the conditions in other parts of the country" in which operators conduct air tours.[477] The appendix A requirements are equally important for air tour operations in aircraft other than helicopters. The FAA's rationale for extending the requirements and provisions of appendix A to powered-lift remains consistent with the rationale the FAA expressed in its 2007 rule. Enabling powered-lift to be used in commercial air tours is an appropriate step in the safe integration of such aircraft.

Section 1 of appendix A ("Applicability") currently states, "This appendix prescribes operating rules for airplane and helicopter visual flight rules air tour flights conducted in the State of Hawaii under 14 CFR parts 91, 121, and 135."[478] The appendix also defines air tour as "any sightseeing flight conducted under visual flight rules in an airplane or helicopter for compensation or hire."[479] The Update to Air Carrier Definitions

---

[474] Air Tour Operators in the State of Hawaii, 59 FR 49138 (Sep. 26, 1994).
[475] National Air Tour Safety Standards; Final Rule, 72 FR 6883 at 6889 (Feb. 13, 2007), acknowledging that while multiple reasons existed for the accident rate improvement in Hawaii and other parts of the country, the provisions of SFAR No. 71 had a positive impact on safety.
[476] Id. at 6891.
[477] Id. at 6903.
[478] The section includes a paragraph that specifically excludes from its applicability "[f]lights conducted in gliders or hot air balloons." 14 CFR part 136, appendix A, section 1(b).
[479] Id. section 2.

NPRM[480] addressed section 1 of appendix A. In the Update to Air Carrier Definitions NPRM, the FAA determined the existing criteria and requirements of appendix A, section 1, are appropriate to apply to powered-lift. The NPRM also addressed the definitions in section 2 by expanding "air tour" to include sightseeing flights conducted under VFR in a powered-lift.

In this SFAR, the FAA also proposes applying section 3 to powered-lift. Subject to two exceptions, section 3 of appendix A currently requires flotation equipment for air tour operations that occur in Hawaii in single-engine helicopters beyond the shore of any island, regardless of whether the helicopter is within auto-rotational distance[481] of the shore. Each person onboard the helicopter must wear approved flotation gear. This requirement, however, does not apply to helicopters that are amphibious or that are equipped with floats adequate to accomplish a safe emergency ditching and when the approved flotation gear is easily accessible for each occupant. Section 3 also does not apply if each person onboard is wearing approved flotation gear. This proposed rule would extend this requirement to apply to operations that occur in powered-lift. Applying the requirement for flotation equipment would increase the likelihood of surviving in the event of a water landing. These requirements were created specifically for Hawaii due to the rugged terrain. Extending this requirement to all powered-lift operators conducting air tours in Hawaii beyond the shore of any island is appropriate because powered-lift will likely operate in a manner that is similar to rotorcraft when conducting air tour operations in Hawaii.

This proposed rule would apply section 4 of the appendix—the requirement for performance plans—to powered-lift. Section 4 currently applies only to operators of

---

[480] Update to Air Carrier Definitions, NPRM, 87 FR 74995 (Dec. 7, 2022).

[481] In general, autorotational distance is the horizontal distance a rotorcraft can maneuver laterally, while descending without power. See 14 CFR 1.1 (definition of "autorotation"). Factors affecting this distance include: initial altitude above the surface, density altitude, winds, auto-rotation entry airspeed, horizontal airspeed, rotor pitch, aircraft weight, and rotor design.

helicopters and requires operators to complete performance plans based on information in the RFM, considering the maximum density altitude for which the operation is planned for the flight. As discussed above with the requirement of § 136.13, the performance plan must consider all those criteria outlined in paragraphs (a) through (c). Applying this performance plan requirement to operators of powered-lift conducting air tours in Hawaii would ensure the operator conducting the operation is aware of the necessary information concerning the aircraft and the intended operation. This requirement is an appropriate risk mitigation measure for powered-lift because the FAA anticipates powered-lift will generally operate in a manner consistent with how rotorcraft operate when conducting air tours in Hawaii. Environmental conditions relevant to the altitude and temperature of the operation are critical considerations in ensuring safety of flight because both affect the performance of the aircraft. Operators' performance plans would ensure operators' awareness of how conditions could affect the flight; as a result, operators will be in a position to make appropriate contingency plans and make suitable decisions should they encounter hazards during an air tour operation.

Similarly, the FAA proposes that the operating limitations of section 5 of part 136, appendix A (Helicopter Operating Limitations), apply to powered-lift. Section 5 requires the PIC to operate at a combination of height and forward speed that would permit a safe landing in the event of engine power loss in accordance with the height-speed envelope under current weight and aircraft altitude. The FAA proposes applying section 5 to powered-lift conducting commercial air tours that have height velocity information contained within their aircraft flight manuals. Applying such requirements to powered-lift is appropriate because operations conducted under appendix A in powered-lift will likely occur in a manner that is similar to operations presently conducted in rotorcraft. In this regard, the FAA expects powered-lift will hover and have other operating characteristics similar to rotorcraft when conducting air tours. This section, in

particular, is important because engine power loss could have detrimental consequences; as a result, powered-lift may require quick landings in response to engine failures. An appropriate means of mitigating the risk associated with an engine power loss is to require the PIC to operate the aircraft in a manner that permits the PIC to land safely. Such aspects are unique to the type of aircraft and the circumstances of the operation. As a result, the FAA determined the proposed inclusion of powered-lift in this requirement would be a suitable risk mitigation measure.

Part 136, appendix A, section 6, Minimum flight altitudes, and section 7, Passenger briefing, currently apply in general terms to air tour flights in Hawaii and do not specify the type of aircraft used for such flights. Therefore, amending these sections to apply to additional types of aircraft is not necessary; the minimum flight altitudes and passenger briefing requirements would apply to all air tour flights in Hawaii, regardless of the aircraft used in such flights.[482]

F. Part 43 Applicability to Powered-Lift

Part 43 prescribes rules governing the maintenance, preventive maintenance, rebuilding, and alteration of any aircraft having a U.S. airworthiness certificate; foreign-registered civil aircraft used in common carriage or carriage of mail under the provisions of part 121 or 135; and airframe, aircraft engines, propellers, appliances, and component parts of such aircraft.[483] As discussed previously, the regulations under title 14 of the Code of Federal Regulations that reference "aircraft" currently apply to powered-lift.

---

[482] In the FAA's National Air Tour Safety Standards rule, the FAA emphasized the importance of passenger briefings for overwater operations. Id. at 6902. The FAA cited a 1999 report from the Department of Transportation's Office of Inspector General, Oversight of the Air Tour Industry, Report No. AV-1999-099 (May 28, 1999), available at https://www.oig.dot.gov/library-item/30819. That report cites one air tour accident flight that occurred in Hawaii, in which three fatalities resulted when occupants were not able to use life preservers that were located in their containers beneath each seat. Ensuring aircraft remain at minimum safe altitudes provides an additional safety margin for dealing with in-flight emergencies; as the FAA stated in National Air Tour Safety Standards, the FAA imposes more restrictive altitude standards for air tours in Hawaii due to the large volume of commercial air tour flights in a relatively small amount of airspace.

[483] 14 CFR 43.1.

Sections 43.2, 43.5, 43.10, 43.11, 43.12, 43.13, and 43.17 and appendix F to part 43 all apply to "aircraft", and, accordingly, to powered-lift.

Sections 43.1, 43.3, 43.7, 43.9, and 43.15 and appendices A, B, D, and E to part 43 all refer to aircraft, which include powered-lift, but some paragraphs within these sections are specific to airplane, rotorcraft, propellers, and helicopter, which the FAA reviewed to determine which of those regulations would also be appropriate to apply to powered-lift. The FAA determined that it would be appropriate to apply §§ 43.3(h) and 43.15(b) to powered-lift as described in the paragraphs that follow.

Section 43.3(h) states that the Administrator may approve a part 119 certificate holder, operating rotorcraft in a remote area under part 135, to allow a pilot to perform specific preventive maintenance items, under certain limitations, when no certificated mechanic is available and an unscheduled malfunction occurs. The preamble for this rule indicated that a part 119 certificate holder that operates rotorcraft in remote sites under part 135 can allow an appropriately trained and authorized pilot to perform preventive maintenance as defined in § 1.1 and as listed in appendix A to part 43.[484] The FAA expects a pilot who is trained under the requirements of § 43.3(h) would provide the same level of competency as a certificated mechanic when performing the authorized preventive maintenance function.[485] The pilot, who is required to complete an approved training program, performs the specific preventive maintenance items under the direct control of the certificate holder's preventive maintenance program. Some powered-lift may operate in remote areas and would consequently experience the same challenges that exist for rotorcraft when an unscheduled malfunction occurs. Therefore, the FAA

[484] See Rotorcraft Regulatory Review Program Amendment No.5; Operations and Maintenance, 51 FR 40692 at 40702 (Nov. 7, 1986).
[485] See Rotorcraft Regulatory Review Program Amendment No.5; Operations and Maintenance, 51 FR 40692 (Nov. 7, 1986).

proposes in §194.402 that the preventive maintenance protocols outlined in § 43.3(h) also apply to certificate holders under part 135 operating powered-lift in remote areas.

In addition to § 43.3(h), § 43.15(b) requires the person performing an inspection required by part 91 on a rotorcraft to inspect certain aircraft system(s) in accordance with the manufacturer's maintenance manual or Instructions for Continued Airworthiness. The systems listed under § 43.15(b) are generally considered systems comprised of "critical parts" as defined in §§ 27.602 and 29.602.[486] The FAA proposes applying § 43.15(b) to persons performing an inspection required by part 91 on a powered-lift. Those parts that the powered-lift manufacturer has identified as "critical parts" used for flight will be a required inspection item and will be identified and listed in the aircraft manufacturer's maintenance manual. Powered-lift are new entrant aircraft, and as a result, the FAA does not have the information to know all the systems on any given powered-lift that may be considered a critical part. In determining critical parts, the manufacturer must consider a flight safety-critical aircraft part list which, if nonconforming, missing, or degraded, could cause a catastrophic failure resulting in loss of, or serious damage to, the aircraft or an uncommanded engine shutdown resulting in an unsafe condition. The characteristic can be critical in terms of dimension, tolerance, finish, or material; an assembly, manufacturing, or inspection process; or an operation, maintenance, or overhaul requirement. Examples of critical part(s) may include a multi-computer aircraft system with a high level of automation in order to aviate, navigate, or communicate or integrated flight control/navigation systems with advanced fly-by-wire flight control system that utilizes electronically operated controls with no direct mechanical link from the pilot to the control surfaces. For powered-lift with critical parts, a type design must include a

[486] Sections 27.602 and 29.602 define a "critical part" as "a part, the failure of which could have a catastrophic effect upon the rotorcraft, and for which critical characteristics have been identified which must be controlled to ensure the required level of integrity." The procedures referenced in §§ 27.602(b) and 29.602(b) will be addressed during the § 21.17(b) certification process.

critical parts list and define the critical design characteristics, identify processes that affect those characteristics, and identify the design change and process change controls necessary for showing compliance with the quality assurance requirements of part 21. Consequently, the FAA proposes to apply § 43.15(b) to persons performing an inspection required by part 91 on powered-lift "critical parts", as outlined in the aircraft manufacturer's maintenance manual or that the FAA otherwise deems appropriate, in order to provide an equivalent level of safety to those aircraft. The FAA invites comments to understand the types of systems and critical parts expected to comprise powered-lift.

Additionally, the FAA will evaluate the existing airman certification testing standards under part 65 for mechanics and repairmen to determine if any revisions to those standards are necessary to incorporate powered-lift and, if any updates are necessary, promulgate those updates to correspond with the issuance of the final rule.

G. Pilot Records Database

Part 111 prescribes rules governing the use of the Pilot Records Database (PRD). The PRD facilitates the sharing of pilot records among air carriers and other operators in an electronic data system managed by the FAA.[487] Part 111 requires air carriers, specific operators holding out to the public, entities conducting public aircraft operations, air tour operators, fractional ownerships, and corporate flight departments to enter relevant data on individuals employed as pilots into the PRD. The PRD is intended to help maintain records about a pilot's performance with previous employers that could influence a future employer's hiring decision.[488] Section 111.1 outlines part 111 applicability. Specifically, § 111.1(b)(4) introductory text states that part 111 applies to an operator that operates two or more aircraft described in paragraphs (b)(4)(i) and (ii), solely pursuant to the

[487] See Pilot Records Database, 86 FR 31006 (Jun. 10, 2021).
[488] Id.

general operating rules in part 91, or that operates aircraft pursuant to a Letter of Deviation Authority issued under § 125.3. Paragraphs (b)(4)(i) and (ii) apply to standard airworthiness airplanes that require a type rating under § 61.31(a) and turbine-powered rotorcraft, respectively. The FAA refers to the operators outlined under § 111.1(b)(4) as "corporate flight departments."[489]

The FAA proposes to require reporting by corporate flight departments that operate large powered-lift pursuant to the general operating and flight rules in part 91 or pursuant to a Letter of Deviation Authority issued under § 125.3. Section 111.1(b)(4)(i) applies to airplanes that require a type rating under § 61.31(a) (or similar in the case of paragraph (b)(4)(ii) for turbine-powered rotorcraft). Currently, a large powered-lift requires a type rating under § 61.31(a)(1)[490] and is therefore similar to the airplanes that require a type rating under § 111.1(b)(4)(i). In addition, the FAA expects that pilots of large powered-lift may go on to work for an air carrier in the future. Reporting these pilot records would be relevant to a future hiring air carrier. Therefore, the FAA proposes permanently amending § 111.1(b)(4) to include a new paragraph (b)(4)(iii) that applies to large powered-lift. This proposal aligns with the current requirements and intent of § 111.1(b)(4) and the type rating requirements under § 61.31(a).

VII. Air Traffic Operations

The FAA will leverage its existing standards and procedures used today for aircraft for powered lift air traffic operations. The FAA develops air traffic standards and procedures including those governing the separation of aircraft by ATC. Air traffic services are administered for the purpose of ensuring the safe, orderly, and expeditious

---

[489] Id.

[490] Section 61.31(a)(1) states that a person who acts as a PIC of any "large aircraft (except lighter-than-air)" must hold a type rating for that aircraft. Because powered-lift are considered "aircraft", this requirement currently applies to large powered-lift.

flow of air traffic. The standards and procedures may differ based upon factors such as the classification of airspace and aircraft. Currently, there are separation standards that apply differently to certain aircraft. The FAA is in the process of identifying and implementing any necessary updates to the existing separation standards that capture powered lift operations.

The air traffic separation standards are contained in Air Traffic Order (JO) 7110.65, Air Traffic Control. Currently, the Order explicitly addresses separation standards and procedures for how ATC handles "aircraft" and provides alternative handling procedures for aircraft classified as a "helicopter". JO 7360.1, Aircraft Type Designators, provides standard abbreviations (aircraft type designators) for the most common aircraft that are provided with air traffic services. JO 7360.1 identifies those aircraft considered to be helicopters for the purpose of applying ATC procedures as per JO 7110.65. The FAA is considering the need to update how the JO 7110.65 procedures may need to be amended to accommodate new or differing aircraft types certified as powered-lift.

The Air Traffic Organization (ATO) is working closely with their partners in Aviation Safety (AVS) to update the standards and procedures contained in JO 7110.65 to address those aircraft certified as powered lift to ensure that they can operate safely and efficiently in the NAS. Aircraft are currently separated by classification (Weight) and categorization (Wake). Another factor is the distance the aircraft are from the surveillance radar antenna source that is interrogating the aircraft. Although aircraft manufacturers provide the FAA with data to make initial determinations, the Office of NextGen performs an analysis of the data along with AVS to establish wake separation standards. The ATO continuously monitors NAS operations and event data to ensure these standards are not adversely affecting safety of NAS operations.

While the ATO takes the necessary steps to update the standards and procedures for powered lift aircraft, the standards and procedures which apply to aircraft, which is defined in § 1.1 as a device that is used or intended to be used for flight in the air, continue to apply to powered-lift.

The ATO stood up a FAA crossline of business team that routinely meets, in part, to exchange information, identify gaps in knowledge and identify potential solutions, and conduct a review of the existing separation standards to make recommendations and support the integration of powered-lift. The team plans to consider information such as aircraft maneuverability and other performance characteristics when discussing whether updates are needed to better account for any performance unique to powered-lift. The team's goal is to accomplish the necessary initial updates prior to powered-lift entering into commercial service.

As the recommendations are developed, the Office of Primary Responsibility or designated representatives will coordinate the recommendations for review and clearance as appropriate. During the review process, the Office of Safety and Technical Training may determine that a Safety Risk Management panel is necessary due to the impact of the recommended changes on the NAS.

While the powered-lift SFAR will fully enable powered-lift operations, the FAA will continue to review and evolve the rules and procedures as powered-lift performance and operational tempo evolve over time. Updates to JO 7110.65 will enable powered-lift operations by accounting for them in existing procedures and standards, while also establishing new procedures for their unique VTOL performance capabilities. The FAA acknowledges that the safety and efficiency of these operations is critical in ensuring the success of the industry.

VIII. International Operations for Powered-Lift

The FAA's policy is to meet the U.S. obligations under the Convention on International Civil Aviation ("Chicago Convention") by conforming to the International Civil Aviation Organization (ICAO) Standards and Recommended Practices (SARPs) to the maximum extent practicable. ICAO annexes contain the international SARPs for safety, regulation, and efficiency of air navigation. The Chicago Convention ensures that certificates of airworthiness, certificates of competency, and licenses are recognized by other Member States as long as the issuing States meet the minimum ICAO standards. The Member States' Civil Aviation Authorities each integrate the ICAO SARPs into their national legal frameworks and practices and are responsible for regulatory oversight.

A. Personnel Licensing

Part 61 prescribes the requirements for the issuance of pilot, flight instructor, and ground instructor certificates, as well as the privileges and limitations of such. ICAO Annex 1 provides the SARPs for personnel licensing, including those for pilot and instructor licensing for powered-lift.[491] Absent the establishment of classes, the ICAO Annex 1 SARPs dictate[492] that pilots and flight instructors must hold a powered-lift type rating for the powered-lift they operate when conducting international operations.[493] As discussed in section V.A of this preamble, the FAA proposes in this SFAR that, because each powered-lift may have complicated and distinctive operating equipment and characteristics, it is not feasible at this time to establish classes within the powered-lift category. If the FAA were to generalize the training requirements based on the

---

[491] Annex 1 to the Convention on the International Civil Aviation, Personnel Licensing, General rules concerning licenses, 1.2 (Jul. 2022).
[492] Annex 1 defines Standards, in pertinent part, as specifications that are recognized a necessary for the safety or regularity of international air navigation and to which Contracting States will conform in accordance with the Convention.
[493] Annex 1 to the Convention on the International Civil Aviation, Personnel Licensing, Circumstances in which class and type ratings are required, section 2.1.1.4 (Jul. 2022).

classification of powered-lift, the training requirements would not sufficiently address the unique characteristics of each powered-lift that require specific powered-lift training and testing to determine pilot competency in flying the aircraft. Instead, the FAA proposes that pilots must hold a type rating to serve as PIC for each type of powered-lift. Therefore, the FAA's proposal complies with the standard dictated in ICAO Annex 1.

ICAO also sets forth recommendations[494] for the issuance of a powered-lift category rating on a private pilot license, commercial pilot license, and ATP license.[495] Specifically, these provide recommended flight hours of experience, including solo flight time, cross-country flight time, and night flight time, as applicable; and flight instruction time, including areas of operational experience. Additionally, these recommendations encourage a licensing authority to determine whether experience as a pilot in other categories of aircraft or under instruction in an FSTD are acceptable in obtaining a powered-lift category rating. The FAA acknowledges these recommendations and has proposed regulations in this SFAR, as explained in this preamble, that the FAA has determined will ensure a sufficient level of safety, while considering such recommendations. Should these ICAO recommendations become standards in the future, the FAA will undertake measures to align with ICAO standards as a Member State as practicable.

The FAA also notes that ICAO sets forth recommended transitional measures to ensure Member States have adequate time to implement pilot licensing requirements for powered-lift. Specifically, in the transitional measures, section 2.1.1.4 states that a licensing authority may endorse a type rating for a powered-lift category on an existing airplane or helicopter pilot license (i.e., certificate). Should a licensing authority

---

[494] Annex 1 defines Recommended Practices, in pertinent part, as any specification of which the uniform application is recognized as desirable in the interest of safety, regularity, or efficiency of international air navigation, and to which Contracting States will endeavor to conform in accordance with the Convention.
[495] Annex 1, sections 2.3.5, 2.4.5, 2.6.5.

implement this endorsement, the endorsement must indicate the aircraft is part of the powered-lift category and must result from training during a course of approved training. Additionally, the training must consider previous experience in an airplane or helicopter, as appropriate, and incorporate all relevant operational aspects of a powered-lift. The FAA is not implementing this permissive transitional measure; rather, through this SFAR, the FAA is facilitating alternative measures for a pilot to directly receive a powered-lift category rating and a powered-lift type rating instead of adding an endorsement for the type rating to an existing airplane or helicopter certificate. However, as discussed in this preamble, these alternative measures to receive a powered-lift category and type rating would be completed during a course of approved training (i.e., part 135, 141, or 142) and would take previous experience of an applicant in an airplane or helicopter into account, as appropriate.[496]

B. Operations of Aircraft

Under the Chicago Convention, flights operating in international airspace over the high seas must also follow the international standards set forth in ICAO Annex 2.[497] ICAO Annex 2 contains the standards applicable to the flight and maneuver of civil aircraft operating over the high seas and over national territories to the extent that they do not conflict with the rules of the State over which they are flying.[498] ICAO Annex 2 was incorporated by reference into § 91.703, effective August 18, 1990,[499] and is also cited in § 135.3.

U.S. operators intending to operate powered-lift over the high seas must comply with the applicable requirements of ICAO Annex 2. While in foreign airspace, operators

---

[496] For more information on how the FAA will consider previous aeronautical experience for powered-lift pilots, see section V.A.
[497] Incorporation by Reference (IBR) of ICAO and Annex (Updates Existing IBR; Removal of North Atlantic (NAT) Minimum Navigation Performance Specifications (MNPS).
[498] Id.
[499] Revision of General Operating and Flight Rules, 54 FR 34320 (Aug. 18, 1989).

must follow the rules and regulations of those countries as specified in § 91.703 or § 135.3 and ICAO Annex 2. Though Annex 2 is silent on powered-lift, its standards are applicable to "aircraft." Annex 2 defines aircraft as "any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface."[500] Given Annex 2's general application to aircraft, U.S. operators would be able to conduct their operations over the high seas so long as the PIC is operating in accordance with the Rules of the Air in Annex 2. However, U.S. air carriers seeking to operate powered-lift in foreign airspace must follow the rules and regulations of those states.

Section 129.5(b) of title 14 requires foreign air carriers conducting operations in the U.S. to conduct their operations in accordance with the Standards in Annex 1 (Personnel Licensing); Annex 6 (Operation of Aircraft); part I (International Commercial Air Transport - Aeroplanes) or part III (International Operations - Helicopters), as appropriate; and in accordance with Annex 8 (Airworthiness of Aircraft) to the Convention on International Civil Aviation. To ensure an adequate level of safety for part 129 operators, the FAA issues operations specifications to identify restrictions, limitations, and U.S. airspace requirements, including navigation differences. Annex 6 currently does not contain standards for powered-lift operations, consequently restricting the FAA's ability to propose any changes to part 129 for foreign air carriers seeking to operate in the U.S.[501]

C. Airworthiness of Aircraft

Annex 8 does not address powered-lift airworthiness standards. Because ICAO has declared Annex 8 as constituting the minimum standards for the purpose of Article 33

---

[500] Annex 2 to the Convention on International Civil Aviation, Rules of the Air, Definitions, 1-2 (Jul. 2005).
[501] Operations specifications, 14 CFR 129.5(b).

of the Chicago Convention, it is not clear whether the lack of ICAO standards would result in States not recognizing another State's airworthiness certificate for a powered-lift since no minimum international standards have been established. No revision of ICAO Annex 8 design standards for powered-lift has been initiated by ICAO. ICAO Document 10103, Guidance on the Implementation of ICAO Standards and Recommended Practices for Tilt-rotors, sets forth basic guidance relative to large turbine-powered tilt-rotors (a kind of powered-lift); however, this document does not address electric-powered tilt-rotors or other types of powered-lift.

Under §21.17(b), the FAA designates powered-lift as special class aircraft for type certification and applies airworthiness criteria that meet an equivalent level of safety to the existing airworthiness standards.[502] In addition, these special class aircraft are eligible for a standard airworthiness certificate under § 21.183. As such, the FAA intends to apply airworthiness criteria for powered-lift under § 21.17(b) that comply with the intent of ICAO Annex 8 to the Chicago Convention since design standards for these aircraft have not yet been developed.

IX. **Regulatory Notices and Analyses**

Federal agencies consider impacts of regulatory actions under a variety of executive orders and other requirements. First, Executive Order 12866 and Executive Order 13563, as amended by Executive Order 14094 ("Modernizing Regulatory Review") direct that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify the costs. Second, the Regulatory Flexibility Act of 1980 (Pub. L. 96-354) requires agencies to analyze the economic impact of regulatory changes on small entities. Third, the Trade Agreements Act (Pub. L. 96-39) prohibits agencies from setting standards that create

[502] For more information on the certification of powered-lift, see section IV.A.

unnecessary obstacles to the foreign commerce of the United States. Fourth, the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4) requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of $100 million or more (adjusted annually for inflation) in any one year. The current threshold after adjustment for inflation is $177 million using the most current (2022) Implicit Price Deflator for the Gross Domestic Product. The FAA has provided a detailed Regulatory Impact Analysis (RIA) in the docket for this rulemaking. This portion of the preamble summarizes the FAA's analysis of the economic impacts of this rule.

In conducting these analyses, the FAA has determined that this proposed rule: (1) will result in benefits that justify costs; (2) is not an economically "significant regulatory action" as defined in section 3(f) of Executive Order 12866; (3) will not create unnecessary obstacles to the foreign commerce of the United States; and (4) will not impose an unfunded mandate on State, local, or tribal governments, or on the private sector.

A. Data and Assumptions

This Special Federal Aviation Regulation proposes alternate eligibility requirements to safely certificate initial groups of powered-lift pilots, as well as determine which operating rules to apply to powered-lift on a temporary basis to enable the FAA to gather additional information and determine the most appropriate permanent rulemaking path for these aircraft. The analysis for the regulatory evaluation is based on the following assumptions and data sources.

- The FAA uses a 10-year time period of analysis.[503] The analysis uses 2022 constant dollars. Year 1 of the period of analysis, which would correlate with the effective date of the proposed rule, is used as the base year.
- The analysis provides a range of costs from low to high. The FAA considers the primary estimate of net impacts of the rule to be the base scenario.
- It is estimated that it would cost an individual approximately $22,124 to accomplish the training and testing required for a type rating.[504] The FAA believes that in many circumstances, this training and testing would be at the expense of an operator using powered-lift in its operations
- Operational rules under parts 43, 91, 97, 135, and 136 that are applicable to aircraft continue to be applicable to powered-lift because powered-lift meet the definition of an aircraft in §1.1. Otherwise, the more conservative airplane specific operational rules will apply to powered-lift, with limited exceptions.
- The FAA uses a three percent and seven percent discount rate to quantify present value costs and cost savings as prescribed by OMB in Circular A-4.[505]

The pilot forecast below were used to estimate costs of the proposed SFAR.

B. Summary of the Regulatory Impact Analysis

The powered-lift currently undergoing the type certification process are comparatively different compared to the powered-lift proposed during the 1990's. Currently, manufacturers are proposing aircraft and operations that were not conceptualized in the 1997 rulemaking that introduced the powered-lift category of

[503] In addition, the FAA acknowledges uncertainty in estimating incremental impacts of this proposed rule since the FAA has yet to type certificate a powered-lift.
[504] The estimated cost for this provision is detailed in the regulatory impact analysis prepared for this SFAR.
[505] OMB Circular A-4, Regulatory Analysis (2003), https://www.whitehouse.gov/wp-content/uploads/legacy_drupal_files/omb/circulars/A4/a-4.pdf.

aircraft into the airmen certification rules. When these rules were introduced, it was the FAA intention to initiate further rulemakings to develop operational rules for powered-lift. However, these intentions never came to fruition.

If powered-lift were available for civil operations today, they would not be subject to operating rules that are specific to an aircraft category or class. Instead, the only rules that would apply are the part 91 rules that are specific to "aircraft." Through this SFAR, the FAA seeks to provide operating rules applicable to powered-lift and to provide a pathway for pilots to obtain powered-lift ratings through alternate aeronautical experience requirements and expanded logging provisions. The regulatory evaluation portion of this SFAR evaluates the economic impact of the proposed amendments.

The table below presents the regulations proposed by this rule on an amendment-by-amendment basis. The first column of the table identifies the affected part; the second column identifies the section and/or paragraph being amended; and the last column identifies the impact of the proposed change. The table is designed to quickly inform the reader of the proposed change and its resulting impact. Amendments with little to no impact are excluded from the table.

Table 11: SFAR - Proposed Amendments

Section	Proposed Amendment	Impact
Part 43 *Maintenance, Preventive Maintenance, Rebuilding, & Alterations*	§ 43.3(h) *Persons authorized to perform maintenance, preventive maintenance, rebuilding, and alterations*	Provides relief to operators of powered-lift on a scale that is equivalent to the relief provided to operators of rotorcraft
	§ 43.15(b) *Additional performance rules for inspections*	Imposes a regulatory burden on operators conducting powered-lift operations on a scale no greater than that imposed on like operators conducting

Section	Proposed Amendment	Impact
		operations with rotorcraft
Part 91 *General Operating and Flight Rules*	§ 91.9(a)(b) *Civil aircraft flight manual* § 91.103(b)(1) *Preflight action* § 91.109 *Flight instruction; Simulated instrument flight* § 91.151 *Fuel requirements for flight in VFR conditions* § 91.167 *Fuel requirements for flight in IFR conditions* § 91.205(b)(11) *Anti-collision lights* § 91.205(b)(14) *Shoulder harness, restraint system* § 91.207 *Emergency locator transmitters* § 91.215 *ATC transponder and altitude reporting equipment and use* § 91.219 *Altitude alerting system or device* § 91.223 *Terrain awareness and warning* § 91.313 *Shoulder harness, restraint system* § 91.409 *Inspection programs* § 91.411 *Altimeter system and altitude reporting* § 91.501 *Applicability* § 91.503 *Flying equipment and operating information* § 91.505 *Aircraft flight manual* § 91.507 *Equipment required for over-the-top or night VFR ops* § 91.509 *Survival equipment* § 91.511 *Communications and navigation* § 91.513 *Emergency equipment* § 91.517 *Passenger information, seatbelts/non-smoking* § 91.519 *Oral briefing* § 91.521 *Safety equipment requirements* § 91.523 *Requirements for storage of carry-on baggage* § 91.525 *Requirements for storage of cargo* § 91.527 *Requirements for operating in icing conditions* § 91.529 *Flight engineer requirements* § 91.531 *Second-in-command requirements* § 91.533 *Flight attendant requirements* § 91.603 *Aural speed warning device* § 91.605 *Transport category civil airplane weight limitations* § 91.609 *Flight data recorders and cockpit voice recorders* § 91.613 *Materials for compartment interiors* § 91.1041 *Proving and validation tests* § 91.1045 *HTAWS and thunderstorm detection equipment* § 91.1065 *Initial and recurrent pilot testing requirements*	Imposes costs on operators of powered-lift on a scale equivalent to costs imposed on operators of airplanes or rotorcraft
Part 91 *General Operating and Flight Rules*	§ 91.107(a)(3) *Use of restraint systems* § 91.205(d)(3) *U.S. airworthiness certificates: Instrument and equipment requirements* § 91.213 *Inoperative instruments and equipment*	Provides relief to operators of powered-lift on a scale equivalent to the relief provided to operators of airplanes or rotorcraft
Part 91 *General Operating and Flight Rules*	§ 91.113(d)(2) and (3) *Right-of-way rules* § 91.126(b)(1) and (2) *Operating in Class G: Direction of turns* § 91.129 *Operations in Class D airspace – approaches* § 91.131 *Operations in Class B airspace* § 91.155 *Basic VFR weather minimums* § 91.157 *Special VFR weather minimums* § 91.169 *IFR flight plan: Information required* § 91.175 *Takeoff and landing under IFR* § 91.515 *Rules for appropriate flight altitudes* § 91.611 *Authorization for ferry flight with one engine – not allowed by SFAR* § 91.1037 *Limitations; destination and alternate airports*	Imposes costs on operators of powered-lift on a scale equivalent to costs imposed on operators of airplanes or rotorcraft

Section	Proposed Amendment	Impact
	§ 91.1039 *IFR takeoff, approach and landing minimums* § 91.1055 *Pilot operating limitations and pairing requirement*	
Part 91	§ 91.126(c) *Operating in Class G airspace - flap settings* § 91.129 *Operations in Class D airspace – minimum altitudes* § 91.129 *Operations in Class D airspace – departures* § 91.129 *Operations in Class D airspace – noise abatement*	Imposes a regulatory burden on operators conducting powered-lift operations on a scale no greater than that imposed on like operators conducting operations with airplanes or rotorcraft.
Part 97 *Standard Instrument Procedures*	§ 97.3. *Copter procedures*	Enabling
Part 135 *Operating Requirements Commuter and On-Demand Operations and Rules Governing Persons on Board Such Aircraft*	§ 135.4 *Applicability of rules for eligible on-demand operations* § 135.23(r)(7) *Manual contents* § 135.93 *Minimum altitudes for use of autopilot* § 135.100 *Flight crewmember cuties* § 135.159(a)(2)(3) *Helicopter exceptions are not allowed* § 135.181 A*ircraft operated over-the-top or in IFR conditions* § 135.183 *Land aircraft operated over water* § 135.203 *VFR: Minimum altitudes* § 135.205 *VFR: Visibility requirements* § 135.207 *VFR: Helicopter surface reference requirements* § 135.221 *Alternate airport weather minimums* § 135.361 *Applicability* § 135.363 *General* § 135.379 *Large transport category airplanes. Turbine engine powered: Takeoff limitations* § 135.381 *Large transport category airplanes. Turbine engine powered: En-route limitations: One engine inoperative* § 135.383 *Large transport category airplanes. Turbine engine powered: En-route limitations: Two engines inoperative* § 135.385 *Large transport category airplanes. Turbine engine powered: En-route limitations: Landing limitations* § 135.387 *Large transport category airplanes. Turbine engine powered: En-route limitations: Landing limitations: Alternate airports* § 135.389 *Large non-transport category airplanes: Takeoff limitations* § 135.391 *Large non-transport category airplanes. En-route limitations: One engine inoperative* § 135.393 *Large non-transport category airplanes. Landing limitations: En-route limitations: Destination airports* § 135.395 *Large non-transport category airplanes. Landing limitations: En-route limitations: Alternate airports* § 135.397 *Small transport category airplanes performance operating limitations* § 135.399 *Small transport category airplanes performance*	Imposes a regulatory burden on operators conducting powered-lift operations on a scale no greater than that imposed on like operators conducting operations with airplanes or rotorcraft.
Part 135 *Operating Requirements Commuter and On-Demand Operations and Rules Governing Persons on*	§ 135.1(a)(9) *Conducting operations in accordance with subpart L (Helicopter Air Ambulance Equipment, Operations, and Training Requirements)* § 135.117(a)(9) *Briefing of passengers before flight* § 135.145 *Aircraft proving and validation tests* § 135.150 *Public address and crewmember interphone systems* § 135.151 *Cockpit voice Recorders* § 135.152 *Flight data recorders* § 135.154 *Terrain awareness warning systems*	Imposes costs on operators of powered-lift on a scale equivalent to costs imposed on operators of airplanes or rotorcraft

Section	Proposed Amendment	Impact
Board Such Aircraft	§ 135.158 *Pitot heat indication systems* § 135.160 *Radio altimeters for rotorcraft operations* § 135.165 *Communication and navigation equipment* § 135.168 *Emergency equipment* § 135.169 *Additional airworthiness requirements* § 135.170 *Materials for compartment interiors* § 135.173 *Airborne thunderstorm equipment requirements* § 135.178 *Additional emergency equipment* § 135.180 *Traffic alert and collision avoidance system* § 135.209 *VFR: Fuel supply* § 135.223 *IFR: Alternate airport requirements* § 135.227 *Icing conditions: Operating limitations* § 135.271 *Helicopter hospital emergency medical evacuation services (HEMES)*	
Part 135 *Operating Requirements Commuter and On-Demand Operations and Rules Governing Persons on Board Such Aircraft*	§ 135.128 *Use of safety belts, child restraint systems* § 135.159(a)(1) *Gyroscopic rate of turn indicator* § 135.163(g) *Exception for helicopters is allowed* § 135.229 *Airport requirements* § 135.429(d) *Required inspection personnel*	Provides flexibility or relief to operators of powered-lift on a scale equivalent to the flexibility or relief provided to operators of airplanes or rotorcraft
Part 61 – *Certification: Pilots, Flight Instructors, and Ground Instructor*s	§ 61.31(a) *Type rating requirements, additional training, and authorization reqts.* § 61.109(e)(5) *Aeronautical experience*	Imposes a regulatory burden on individuals seeking airmen certification in powered-lift on a scale no greater than that imposed on individuals accomplishing airmen certification in other aircraft categories
Part 61 *Certification: Pilots, Flight Instructors, and Ground Instructor*s	Addressing: § 61.1(b) *Applicability and definitions: Cross-country time definition (paragraph (ii))* § 61.3 *Reqt for certificates, ratings, and authorizations: Flt instructor certificate* § 61.45 *Requirement for certificates, ratings, and authorizations: Practical tests: Required aircraft and equipment* § 61.51 *Requirement for certificates, ratings, and authorizations: Pilot logbooks* § 61.55 *Requirement for certificates, ratings, and authorizations: SIC* § 61.63(d)(3) *Additional aircraft ratings (other than for ratings at the airline transport pilot certification level). Proposed eligibility requirements* § 61.65 *Instrument rating requirements* § 61.107 *Flight proficiency* § 61.109(e)(2)(i), (e)(5)(ii) *Aeronautical experience* § 61.127 *Flight proficiency (commercial pilots)* § 61.129 *Aeronautical experience: Alternate experience and logging reqts* § 61.167 *Airline transport pilot privileges and limitations* § 61.195 *Flight instructor limitations and qualifications*	Relieving. No additional regulatory costs.
Part 61 *Certification: Pilots, Flight Instructors,*	Addressing: § 61.64 *Use of a flight simulator and flight training device – SFAR - removes three of four available alternative requirements that enable a person to accomplish a practical test for a powered-lift type rating in a simulator*	Imposes a regulatory burden on individuals accomplishing a powered-lift type

Section	Proposed Amendment	Impact
*and Ground Instructor*s		rating in an FFS on a scale no greater than that imposed on individuals accomplishing a type rating in an FFS for airplanes or helicopters
Part 135 *Operating Requirements Commuter and On-Demand Operations and Rules Governing Persons on Board Such Aircraft*	*SFAR temporarily allow the completion of certain part 135 tests and checks to meet the flight proficiency requirements for the addition of a powered-lift category rating, an instrument-powered-lift rating, and powered-lift type rating to a commercial certificate.*	Relieving
Part 135 *Operating Requirements Commuter and On-Demand Operations and Rules Governing Persons on Board Such Aircraft*	§ 135.3 *Rules applicable to operations subject to this part - FAA proposes certificate holders comply with subpart Y of part 121 (Advanced Qualification Program (AQP)).* § 135.243 *Pilot in command qualifications* § 135.244 *Operating experience* § 135.245 *Second in command qualifications* § 135.293 *Initial and recurrent pilot testing requirements* § 135.297 *Pilot in command: Instrument proficiency check requirements* § 135.340 *Initial and transition training and checking: Check airmen (aircraft), check airmen (simulator)* § 135.345(b)(6)(iv) *Pilots: Initial, transition, and upgrade ground training*	Imposes costs on operators of powered-lift on a scale equivalent to costs imposed on operators of airplanes or rotorcraft
Part 111 *Pilot Records Database*	§ 111.1 *Applicability*	Imposes costs on operators of powered-lift on a scale equivalent to costs imposed on operators of airplanes or rotorcraft
Part 136 *Commercial Air Tours and National Parks Air Tour Management*	§ 136.1 *Suitable landing area for helicopters* § 136.9 *Life preservers for over water* § 136.11(c) *Helicopter floats for over water* § 136.13(a) *Helicopter performance plan and operations* Appendix A *Special Operating Rules for Air Tour Operators in the State of Hawaii*	Imposes costs on operators of powered-lift on the same scale as costs imposed on operators of airplanes or rotorcraft
Part 141 *Flight Schools*	§ 141.35 *Chief instructor qualifications* § 141.36 *Assistant chief instructor qualifications* § 141.37 *Check instructor qualifications*	Relieving – no additional regulatory costs.
Part 142 *Training Centers*	§ 142.47(a), (c) *Training center instructor eligibility requirements* § 142.53 *Training center instructor training and testing requirements*	Imposes a regulatory burden on part 142 training centers conducting powered-lift training on a scale no greater than that imposed on like training centers

Section	Proposed Amendment	Impact
		conducting training with airplanes or rotorcraft
Part 142 *Training Centers*	§ 142.11 *Application for issuance or amendment*	Enabling. No additional regulatory costs unless a part 142 training center chooses conduct training with powered-lift flight simulators and flight training devices.
Part 142 *Training Centers*	§142.57 *Aircraft requirements.*	Provides relief to part 142 training centers conducting powered-lift training on a scale equivalent to that provided to training centers conducting training with airplanes or rotorcraft

1. Benefits Summary

Operations with powered-lift are anticipated to offer benefits over traditional airplanes and rotorcraft. A report published by the U.S. Government Accountability Office stated that many of these newer category of aircraft could be easier to design, simpler to construct, less complicated to maneuver, quieter to fly, and more economical to operate compared to traditional aircraft.[506] Many use cases for these aircraft are envisioned, and just a few are described below.

It is envisioned smaller versions of these aircraft may reduce congestion in urban areas by allowing for more efficient transportation of passengers compared to existing ground transportation methods. To do so, these aircraft would use vertiports located on top of buildings, at parking facilities, or in other open areas.[507] Such transportation could

[506] Transforming Aviation: Stakeholders Identified Issues to Address for 'Advanced Air Mobility' | U.S. GAO.

[507] Vertiport Assessment and Mobility Operations System (VAMOS!) | T2 Portal (nasa.gov) A vertiport refers to a physical structure for the departure, arrival, and parking/storage of advanced air mobility vehicles. Evaluation factors for vertiports include zoning, land use, transit stations, fire stations, noise, and time-varying factors like congestion and demand.

occur from a heliport or vertiport and then proceed at speeds and ranges similar to turboprops. Powered-lift could also be capable of transporting heavier loads at higher altitudes and faster cruise speeds than a traditional rotorcraft. Such capability may increase efficiency in transporting crew and material to remote locations such as offshore oilrigs. Other use cases may involve medical response, disaster relief, rescue operations, border patrol, and last-mile logistics.

This proposed rule is a step toward enabling the ecosystem for this industry to evolve. It applies the appropriate set of rules for a range of certificate-holder operations conducted with powered-lift, and for certification of the pilots that would fly them. It was deliberated with the intent of mitigating risk to the NAS while maintaining its current level of safety.

2. Costs Summary

While operators choosing to conduct operations with powered-lift would incur costs to comply with regulations proposed by this SFAR, these costs would be on a scale no greater than those incurred by operators choosing to conduct operations with airplanes or rotorcraft under similar regulations. Likewise, costs imposed on individuals that choose to accomplish the required training and testing required to hold an airman's certificate with a type rating in the powered-lift category would be on a scale no greater than those incurred by individuals accomplishing training and testing to hold an airman's certificate with a type rating in the airplane or rotorcraft category. In other words, the costs imposed on operators and individuals that choose to comply with regulations proposed by this rule would be no more burdensome than the costs incurred by entities and individuals complying with corresponding airplane and rotorcraft regulations that are already in effect.

However, to address the significant operational differences between each powered-lift, the FAA is proposing to require the PIC of a powered-lift to hold a type

rating for the aircraft flown. The FAA has determined that requiring persons to hold type ratings for powered-lift would establish the appropriate level of safety than would be established by only holding a powered-lift category rating by ensuring persons receive adequate training and are tested on the unique design and operating characteristics of each powered-lift.

The following table presents a summary of the primary estimates of the quantified costs of this rule, as well as estimates for the pessimistic and optimistic scenarios. This analysis provides a range of costs from low to high based on these scenarios. The FAA considers the primary estimate of costs to be the base scenario. For the primary estimate, over a 10-year period of analysis this rule would result in present value costs of approximately $30.5 million at a three percent discount rate with annualized net costs of approximately $3.6 million. At a seven percent discount rate, the present value costs are approximately $24.1 million with annualized costs of $3.4 million.

Table 12: Quantified Costs of Proposed SFAR (Millions$)*

Forecast Scenario	10-Year Present Value (3%)	Annualized (3%)	10-Year Present Value (7%)	Annualized (7%)
Base - Primary Estimate	$30.5	$3.6	$24.1	$3.4
Pessimistic	$27.4	$3.2	$21.0	$3.0
Optimistic	$33.7	$4.0	$27.3	$3.9

*Table notes: Columns may not sum to total due to rounding. Estimates are provided at three and seven percent discount rates per Office of Management and Budget (OMB) guidance.

Please see the regulatory impact analysis for this SFAR available in the docket for more details.

C. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) of 1980, (5 U.S.C. 601–612), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (Pub. L. 104–121) and the Small Business Jobs Act of 2010 (Pub. L. 111–240,), requires Federal agencies to consider the effects of the regulatory action on small business and other small entities and

to minimize any significant economic impact. The term “small entities” comprises small businesses and not-for-profit organizations that are independently owned and operated and are not dominant in their fields, and governmental jurisdictions with populations of less than 50,000.

The FAA is publishing this Initial Regulatory Flexibility Analysis (IRFA) to aid the public in commenting on the potential impacts to small entities from this proposal. The FAA invites interested parties to submit data and information regarding the potential economic impact that would result from the proposal. The FAA will consider comments when making a determination or when completing a Final Regulatory Flexibility Assessment.

An IRFA must contain the following:

(1) A description of the reasons why the action by the FAA is being considered;

(2) A succinct statement of the objective of, and legal basis for, the proposed rule;

(3) A description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply;

(4) A description of the projected reporting, recordkeeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record;

(5) An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap, or conflict with the proposed rule; and

(6) A description of any significant alternatives to the proposed rule which accomplish the stated objectives of applicable statutes and which minimize any significant economic impact of the proposed rule on small entities.

(1) A description of the reasons why the action by the FAA is being considered;

This proposed rule would establish the requirements for the certification and operation of powered-lift. Powered-lift is defined in 14 CFR part 1 as a heavier-than-air aircraft capable of vertical takeoff, vertical landing, and low speed flight that depends principally on engine-driven lift devices or engine thrust for lift during these flight regimes and on nonrotating airfoil(s) for lift during horizontal flight.

The powered-lift that are coming to the civilian market have complex and unique design, flight, and handling characteristics with varying degrees of automation. To add to the challenges, the FAA does not anticipate that the initial powered-lift that obtain type certification will be broadly available for basic airman certification and training at the private pilot level. Rather, manufacturers intend to produce powered-lift for commercial purposes, meaning the initial pilots will be required to hold at least commercial pilot certificates to act as required flightcrew members (i.e., PIC or SIC) for compensation or hire.

The FAA lacks sufficient information at this time regarding emerging operations to implement permanent regulations. The FAA has found the use of an SFAR has been an effective way to gain such experience while enabling some degree of operations. The SFAR will establish a regulatory structure that leverages existing rules, removes operational barriers, and mitigates safety risks for powered-lift. Utilizing the SFAR will allow the FAA to observe operations and subsequently make any requisite safety improvements in a later permanent change to the regulations.

(2) A succinct statement of the objective of, and legal basis for, the proposed rule.

Statement of the legal basis. Through this rulemaking, the FAA will make both permanent and temporary changes to parts 61 and 135 to train and certify powered-lift pilots.

Further, the FAA would enable powered-lift operations under parts 43, 91, 97, 135, and 136 through the SFAR. The FAA is issuing this proposal under the authority described in Title 49 of the United States Code, Subtitle VII, Part A, Subpart i, Section 40113, Administrative, and Subpart iii, Section 44701, General Requirements; Section 44702, Issuance of Certificates; Section 44703, Airman Certificates; Section 44704, Type Certificates, Production Certificates, Airworthiness Certificates, and Design and Production Organization Certificates; Section 44705, Air Carrier Operating Certificates; and Section 44707, Examination and Rating of Air Agencies. Under these sections, the FAA prescribes regulations and minimum standards for practices, methods, and procedures necessary for safety in air commerce, including the authority to examine and rate civilian schools and prescribe regulations to ensure the competency of instructors. The FAA is also authorized under these sections to issue certificates, including airman certificates, type certificates, and air carrier operating certificates, in the interest of safety.

This rulemaking is also proposed under the authority described in Subtitle VII, Part A, Subpart iii, Section 44712, Emergency Locator Transmitters; Section 44713, Inspection and Maintenance; 44715, Noise and Sonic Boom; 44716, Collison Avoidance Systems; and 44722, Winter conditions. These sections direct the Administrator to prescribe regulations to govern the use of emergency locator transmitters and collision avoidance systems, the standards for inspecting and performing maintenance on aircraft, and regulations to control aircraft noise and safety risks related to winter conditions. Lastly, this proposed rulemaking derives authority from Section 44730, Helicopter Air Ambulance Operations, which directs the Administrator to prescribe regulations governing the safety of helicopter air ambulance operations. This proposed rulemaking is issued under the authority described in each of the above sections.

(3) A description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply.

The proposed rule would affect operators of powered-lift under parts 91, 135, and 136, as well as part 141 flight schools and part 142 training centers. Part 91 operators conduct operations for non-commercial purposes while part 135 operators conduct on-demand operations, which may include a limited number of scheduled operations, or commuter operations, which allow an unlimited number of scheduled operations as well as on-demand operations.[508] There are specific limitations associated with these operations depending on whether they are on-demand or commuter. These limitations include the number of passenger seats installed on the aircraft, maximum payload limits, and whether turbo-jet aircraft can be used in the operation. Part 136 operators conduct commercial air tours.

There are five North American Industry Classification System (NAICS) codes for air transportation services based on by type of activity conducted. Four of these codes identify a small entity as one with 1,500 or fewer employees. The exception is NAICS code 481219, which includes "other nonscheduled air transportation." Entities falling within this code are identified as small if revenues are $22 million or less.[509] At the time of this proposed rule, there were approximately 1,700 part 135 operators, and 900 part 91 operators. A vast majority of these operators are small and the FAA does not anticipate that they will be impacted by this rule. Due to this being an emerging market, the number of entities that will be impacted by this rule is uncertain.

Flight training is available through part 141 flight schools or part 142 flight centers. Part 141 flight schools train with actual aircraft while part 142 flight centers train with flight simulators. The FAA notes that NAICS code for flight training is in Sector 61 – Education Services. Specifically, flight training schools are identified by code 611512.

---

[508] https://www.faa.gov/licenses_certificates/airline_certification/135_certification/general_info.
[509] NAICS code 481111- Scheduled Passenger Air Transportation; 481112 – Scheduled Freight Air Transportation; 481211- Nonscheduled Passenger Air Transportation; 481212 – Nonscheduled Freight Air Transportation; 481219 – Other Nonscheduled Air Transportation.

The Small Business Administration identifies entities in this code as small based on revenues of $30 million or less.

There are currently 525 part 141 flight schools and 45 part 142 training centers. FAA conducted research on the internet to determine revenues for these entities. While some of the part 141 flight schools are part of a curriculum offered at an institution of higher learning, most appear to be private entities, and thus revenues were not publicly available. Of the 45 part 142 training centers, 10 have revenues greater than $30 million and 22 were identified as having revenues less than $30 million. Revenue information for the remaining 13 part 142 training centers was not readily available. Based on this information, it is believed that a majority of flight schools under parts 141 and 142 are small entities.

(4) A description of the projected reporting, recordkeeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record.

The FAA prescribes regulations and minimum standards for practices, methods, and procedures necessary for safety in air commerce, including airman certificates, type certificates, and air carrier operating certificates, and the authority to examine and rate civilian schools and prescribe regulations to ensure the competency of instructors. Powered-lift manufacturers, air carriers, pilots, and instructors have important roles in the development of this sector of the aviation industry. The reporting and recordkeeping requirements imposed by this SFAR currently exist for manufacturers and operators of airplanes and rotorcraft. These requirements will now be applicable to those same entities that choose to operate powered-lift. These requirements are described below.

First, each operator which seeks to obtain, or is in possession of, an air carrier or FAA operating certificate is mandated to comply with the requirements of part 135 to

determine if the carrier is operating in accordance with minimum safety standards. This burden results in reporting, recordkeeping, and disclosure requirements. All reporting provisions and approval processes can be accomplished electronically, including operations and maintenance manuals, crewmember and aircraft dispatcher records, maintenance records, and minimum equipment lists. However, certain documents, such as passenger briefing cards, must be available in paper form for safety reasons. The burden imposed on operators by this reporting requirement is proportionate to the size of its operation.[510]

Next, repair stations certificated under part 145 and air taxi operators certificated under part 135 are required to submit Malfunction or Defect Reports, or Service Difficulty Reports. This data identifies mechanical failures, malfunctions, and defects that may be a hazard to the operation of an aircraft. When defects are reported that are likely to exist on other products of the same or similar design, the FAA may disseminate safety information to a particular section of the aviation community. These reports are submitted occasionally. The submission of information for this requirement is accomplished electronically. The FAA has found that this submission of data does not have a significant impact on a substantial number of small businesses.

Lastly, the *Application for Pilot School Certification* is necessary for the FAA to collect information to ensure flight schools will meet the minimum acceptable training standards as prescribed by part 141. The FAA approves course curricula, training facilities, the chief instructor and any assistant chief instructors, if applicable, for each course, and ensures oversight of flight instructors that provide training under part 141. Completion of the required items is of minimal burden to the respondent due to the

---

[510] For example, single pilot operations are not required to prepare an operations manual or training program which significantly reduces the burden. The number of records and required reports are proportional to the number of pilots and aircraft used by the operator. Further, in several cases, such as for passenger briefings or aircraft checklists, commercially produced products are available from the aircraft manufacturer.

simplistic format of the document. The FAA notes that flight training schools are contained within Sector 61, Education Services, of the NAICS code. Specifically, flight training schools are identified by code 611512. The Small Business Administration identifies entities in this code as small based on revenues of $30 million or less. There are currently 525 part 141 flight schools. The FAA is unsure what portion of these schools qualify as small using SBA criteria. While some of the part 141 flight schools are part of a curriculum offered at an institution of higher learning, most appear to be private entities.

(5) An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap, or conflict with the proposed rule.

The FAA is unaware that the proposed rule will overlap, duplicate, or conflict with existing Federal rules.

(6) A description of any significant alternatives to the proposed rule which accomplish the stated objectives of applicable statutes and which minimize any significant economic impact of the proposed rule on small entities.

The FAA considered engaging in permanent rulemaking to address the introduction of powered-lift in civilian operations. However, the FAA lacks sufficient information at this time regarding emerging operations to implement permanent regulations. The FAA has found the use of an SFAR has been an effective way to gain such experience while enabling some degree of operations, therefore, the FAA find that the use of an SFAR is the most viable option at this time. Utilizing the SFAR will allow the FAA to observe operations and subsequently make any requisite safety improvements in a later permanent change to the regulations.

Another alternative considered for this SFAR included the number of years it would remain in effect. After contemplating several options, the FAA determined ten years to be an appropriate length of time. In selecting ten years as the appropriate

duration for this SFAR, the FAA considered a number of factors including the time it will take to initiate operations after the adoption of this NPRM as a final rule considering the type certification status of the powered-lift that are commercially viable. The FAA also considered the appropriate length of time to collect operational data after operators initiate commercially viable operations, and then the time necessary to complete a subsequent rulemaking to propose and implement permanent regulations.

D. International Trade Impact Assessment

The Trade Agreements Act of 1979 (Pub. L. 96-39), as amended by the Uruguay Round Agreements Act (Pub. L. 103-465), prohibits Federal agencies from establishing standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. Pursuant to these Acts, the establishment of standards is not considered an unnecessary obstacle to the foreign commerce of the United States, so long as the standard has a legitimate domestic objective, such as the protection of safety and does not operate in a manner that excludes imports that meet this objective. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards. The FAA has assessed the potential effect of this proposed rule and determined that it ensures the safety of the American public and does not exclude imports that meet this objective. As a result, the FAA does not consider this rule as creating an unnecessary obstacle to foreign commerce.

E. Unfunded Mandates Assessment

The Unfunded Mandates Reform Act of 1995 (2 U.S.C. 1531-1538) governs the issuance of Federal regulations that require unfunded mandates. An unfunded mandate is a regulation that requires a State, local, or tribal government or the private sector to incur direct costs without the Federal Government having first provided the funds to pay those

costs. The FAA determined that the proposed rule will not result in the expenditure of $165 million or more by State, local, or tribal governments, in the aggregate, or the private sector, in any one year.

F. Paperwork Reduction Act

The Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)) requires that the FAA consider the impact of paperwork and other information collection burdens imposed on the public. According to the 1995 amendments to the Paperwork Reduction Act (5 CFR 1320.8(b)(2)(vi)), an agency may not collect or sponsor the collection of information, nor may it impose an information collection requirement unless it displays a currently valid Office of Management and Budget (OMB) control number.

This action contains the following proposed amendments to the existing information collection requirements previously approved under OMB Control Numbers 2120-0039, -0600, -0663, -0009, and-0021. As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), the FAA has submitted these proposed information collection amendments to OMB for its review.

1. Revision of Existing Information Collection 2120-0039: Operating Requirements: Commuter and On-Demand Operation[511]

Abstract: Each operator which seeks to obtain, or is in possession of, an air carrier or FAA operating certificate is mandated to comply with the requirements of part 135 in order to maintain data which is used to determine if the carrier is operating in accordance with minimum safety standards. Air carrier and commercial operator certification is completed in accordance with part 119. Part 135 contains operations and maintenance

[511] Official FAA forecasts related to the operation of powered-lift in the NAS have yet to be developed. Thus, forecasts for operators of part 135 aircraft and fleet were prepared solely for the purpose of estimating the cost of the information collections affiliated with this proposed rule, and developed using publicly available data related to orders and options for powered-lift Using the fleet forecast and an assumption for utilization (i.e. hours flown), forecasts for airmen and departures were also developed to estimate incremental costs of the paperwork burden.

requirements. The burden associated with part 135 is associated with reporting, recordkeeping and disclosure.

The FAA has estimated the increase in the existing burden for this collection based on four part 119 certificate holders beginning powered-lift operations by the end of the third year following finalization of this proposed rule. Note that not all information collection requirements are proposed to have a burden increase as a result of the proposed revisions to this information collection.

Table 13: Three-Year Incremental Burden for 2120-0039
Operating Requirements: Commuter and On-Demand Operations

Section	Section Title	# of Respondents	# of Responses	Total Responses	Hours-JobCat (1)	Hours-JobCat (2)	Hours-JobCat (3)	Hours-JobCat (4)	Hours-JobCat (5)	Total Burden (Hours)	Total Burden (Cost)
135.21	Manual requirements	4	5	20	0.5		2.0			50.0	$2,097
135.63	Recordkeeping requirements-aircraft available for use	2	2	4			1.0			4.0	$185
	Pilot records	173	4	692	0.1					69.2	$1,696
	Pilot flight & duty	173	200	34,600	0.1					3,460.0	$84,805
	Load manifest	292,273	1	292,273	0.1					29,227.3	$716,360
135.64	Retention of contracts and amendments written	6	13	78		0.5				39.0	$1,514
	Retention of contracts and amendments oral	6	2	12	0.5					6.0	$147
135.65	Reporting manual irregularities	6	75	450					0.3	112.5	$7,611
135.79	Flight locating requirements	2	1	2			0.5			1.0	$46
135.117	Briefing of passengers before flight	292,273	1	292,273					0.03	8,768.2	$593,167
135.179	Inoperable instruments and equipment	6	1	6	3.0		20.0			138.0	$5,996
135.227	Icing limitations	6	1	6	5.0		20.0			150.0	$6,290
135.325	Training program and revision	6	1	6	5.0		15.0			120.0	$4,901
135.415	Mechanical reliability reports	131	1	131				1.0		131.0	$6,119
135.417	Mechanical interruption	6	12	72				1.0		72.0	$3,363

Section	Section Title	# of Respondents	# of Responses	Total Responses	Hours-JobCat (1)	Hours-JobCat (2)	Hours-JobCat (3)	Hours-JobCat (4)	Hours-JobCat (5)	Total Burden (Hours)	Total Burden (Cost)
	summary report										
135.419	Approved aircraft inspection program	6	1	6	0.5			1.0		9.0	$649
135.431	Continuing analysis and surveillance	6	1	6				70.0		420.0	$35,967
	Incremental burden									42,777.2	$1,454,270

Note: Row and column totals may not sum due to rounding.

2. Revision of Existing Information Collection 2120-0600: Training and Qualification Requirements for Check Airmen and Flight Instructors[512]

Abstract: The reporting requirements are to ensure the check pilots and instructors are adequately trained and checked/evaluated to ensure they are capable and competent to perform the duties and responsibilities required by the air carrier to meet the regulations. Experienced pilots who would otherwise qualify as flight instructors or check airmen, but who are not medically eligible to hold the requisite medical certificate are mandated to keep records that may be inspected by the FAA to certify eligibility to perform flight instructor or check airmen functions. This information is inspected on occasion and will be used by the FAA to determine and to assure that check airmen and instructors maintain the high qualification standards (training and experience) required to perform their safety functions.

The FAA has estimated the increase in the existing burden for this collection based on the percentage of instructors that are not medically eligible to hold the requisite medical certificate and are mandated to keep records that may be inspected by the FAA

[512] Official FAA forecasts related to the operation of powered-lift in the NAS have yet to be developed. Thus, forecasts for operators of part 135 aircraft and fleet were prepared solely for the purpose of estimating the cost of the information collections affiliated with this proposed rule and developed using publicly available data related to orders and options for powered-lift. FAA notes that none of the orders for the multitude of powered-lift models being developed are firm as of the time of this writing, with the exception of one model. Using the fleet forecast and an assumption for utilization (i.e. hours flown), forecasts for airmen and departures were also developed to estimate costs of the paperwork burden.

to certify eligibility to perform flight instructor or check airmen functions. The table below shows the incremental burden by the end of the third year following finalization of the proposed rule for this recordkeeping requirement.

Table 14: Three-Year Burden Estimate for Information Collection 2120-0600[513]
Training and Qualification Requirements for Check Airmen and Flight Instructors

	Total Burden
Respondents	66
Responses per Respondent	1
Time per Response - 15 seconds (in minutes)	0.25
Total Incremental Time (in minutes)	16.44
Total Incremental Time (in hours)	0.27
Cost per Hour (Check Airman Wage plus Benefits - per Hour)	$87.63
Total Incremental Cost	$24.54

Note: Row and column totals may not sum due to rounding.

3. Revision of Existing Information Collection 2120-0663: Service Difficulty Report[514]

Abstract: Service Difficulty Reports (SDRs), may be used by the air carrier industry and repair stations to submit mandated reporting of occurrences or detection of failures, malfunctions, or defects and can be submitted in an electronic format. Repair stations certificated under part 145 and Air taxi operators certificated under part 135 are required to submit Malfunction or Defect Reports, or Service Difficulty Reports. Report information is collected and collated by the FAA and used to determine service

[513] The current collection identifies 15,925 respondents performing recordkeeping requirements. The 2021 Civil Airmen Statistics (source: https://www.faa.gov/data_research/avia)tion_data_statistics/civil_airmen_statistics) shows there are 121,270 active flight instructors, thus 13.1 percent of the flight instructor population (15,925 ÷ 121,270 = .131) perform this recordkeeping requirement. Additionally, FAA records show 251 active airmen holding a flight instructor certificate with a powered-lift rating; thus, it is estimated that 13.1 percent of these airmen are affected by the recordkeeping requirement (for a total of 32.9 airmen).

[514] Official FAA forecasts related to the operation of powered-lift in the NAS have yet to be developed. Thus, forecasts for operators of part 135 aircraft and fleet were prepared solely for the purpose of estimating the cost of the information collections affiliated with this proposed rule, and developed using publicly available data related to orders and options for powered-lift. FAA notes that none of the orders for the multitude of powered-lift models being developed are firm as of the time of this writing, with the exception of one model. Using the fleet forecast and an assumption for fleet utilization (i.e. hours flown), forecasts for airmen and departures were also developed to estimate costs of the paperwork burden.

performance of aeronautical products. When defects are reported which are likely to exist on other products of the same or similar design, the FAA may disseminate safety information to a particular section of the aviation community. The FAA also may adopt new regulations or issue Airworthiness Directives (ADs) to address a specific problem.[515] The regulations enhance air carrier safety by collecting additional and timelier data pertinent to critical aircraft components. This data identifies mechanical failures, malfunctions, and defects that may be a hazard to the operation of an aircraft. Reports are submitted on occasion.

The FAA has estimated the increase in the existing burden for this collection based on four part 119 certificate holders beginning powered lift operations under part 135 by the end of the third year following finalization of this proposed rule.

Table 15: Three-Year Burden Estimate for Information Collection 2120-0063 Service Difficulty Report

Summary (Three Years)	Reporting	Recordkeeping	Disclosure
# of Respondents	4		
# of Responses per respondent	1		
Time per Response	0.667		
Total # of responses	4		
Total burden (hours)	2.7		
Total Burden (cost)[516]	$95.8		

Note: Row and column totals may not sum due to rounding.

4. Revision of Existing Information Collection 2120-0009: Application for Pilot School Certification

Abstract: This information is reported and recorded by 14 CFR part 141 certificated pilot schools seeking to maintain their Air Agency Certification.

[515] ADs are mandatory repair or modifications essential for the prevention of accidents.
[516] Costs are based upon a private industry hourly wage of $25.18. The fully-burdened wage is $35.90 and includes employee compensation related to benefits that is estimated to be 30.0 percent of the fully-burdened wage. (Source: Bureau of Labor Statistics, Employer Costs for Employee Compensation. https://www.bls.gov/news.release/pdf/ecec.pdf by month)

Uncertificated pilot schools seeking certification as a part 141 pilot school are also required by part 141 to report information to the FAA and keep specific records. Part 141 pilot schools train private, commercial, flight instructor, and ATPs, along with training for associated ratings in various types of aircraft. The information collected becomes a part of the FAA's official records and is only used by the FAA for certification, compliance, enforcement, and when accidents, incidents, reports of noncompliance, safety programs, or other circumstances requiring reference to records. The requirements of part 141 include reporting and recordkeeping. The FAA has estimated the increase in the existing burden for this collection based on one new applicant per year for part 141 certification and one renewal.

Table 16: Three-Year Burden Estimate for Information Collection 2120-0009[517] Application for Pilot School Certification

Section	Burden Type	Time/Response (hours)	Responses	Total Time (Hours)	Labor Cost ($35.84/hr)
§ 141.13, Application	Reporting	0.5	4	2.0	$72
§ 141.53, Training course outline	Reporting	25.0	3	75.0	$2,688
§ 141.63, Application for examining authority	Reporting	20.0	3	60.0	$2,150
§ 141.87, Change of chief instructor	Reporting	0.1	3	0.3	$11
§ 141.110, Training records	Recordkeeping	50	3	150	$5,376
Total				136.8	$10,297

Note: Row and column totals may not sum due to rounding.

5. Revision of Existing Information Collection 2120-0021: Airman Certificate and/or Rating Application

Abstract: The Airman certificate and/or Rating Application form and the required records, logbooks and statements required by part 61 are submitted to Federal Aviation Administration (FAA) Flight Standards District Offices or its representatives to determine qualifications of the applicant for issuance of a pilot or instructor certificate, or

[517]The FAA believes that the responses to this information collection will be performed by flight instructors and similar personnel at certificated pilot schools. The median hourly wage for these occupations is $27.38. The FAA multiplied this base hourly rate by 1.309, representing a load factor of 30.9%, and a fully loaded wage of $35.84.

rating or authorization. If the information collection was not conducted, the FAA would be unable to issue the appropriate certificates and ratings. The information collected becomes a part of the FAA's official records and is only used by the FAA for certification, compliance, enforcement, and when accidents, incidents, reports of noncompliance, safety programs, or other circumstances requiring reference to records. The requirements of part 61 include reporting and recordkeeping.

Table 17: Three-Year Burden Estimate for Information Collection 2120-0021518

Airman Certificate and/or Rating Application

Section	Time per Response (hours)	Responses	Reporting (hours)	Record-keeping (hours)	Total Cost (15.40/hr)
61.13	0.10	89	8.9		$137
61.39	0.05	89	4.5		$69
61.49	0.05	1	0.0		$0
61.51	1.00	23		23.1	$356
61.56(a)	0.10	23	2.3		$36
61.57	0.10	89		8.9	$137
61.87	0.05	89		4.5	$69
61.93	0.10	89		8.9	$137
61.185	0.10	15		1.5	$23
61.189	1.00	15		15.0	$231
61.197	0.10	15	1.5		$23
TOTALS		**537**	**17**	**62**	**$1,217**

The FAA is soliciting comments to—

[518]To calculate the economic burden on respondents, the FAA uses an hourly rate of $15.40. This is an all-purpose travel-time rate, which is appropriate for this ICR because respondents represent a wide array of occupations, and are often performing their reporting or recordkeeping activities on their own time. The travel-time rate is derived from Department of Transportation guidance (https://www.faa.gov/regulations_policies/policy_guidance/benefit_cost/), modified by a Consumer Price Index for all Urban Consumers (CPI-U) value calculated by the Minneapolis Fed (https://www.faa.gov/regulations_policies/policy_guidance/benefit_cost/). The FAA is not applying a load factor for overhead or benefits, because, as noted, these activities are typically not performed as part of a respondent's job or occupation.

(1) Evaluate whether the proposed information requirement is necessary for the proper performance of the functions of the FAA, including whether the information will have practical utility;

(2) Evaluate the accuracy of the FAA's estimate of the burden;

(3) Enhance the quality, utility, and clarity of the information to be collected; and

(4) Minimize the burden of collecting information on those who are to respond, including by using appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology.

Individuals and organizations may send comments on the information collection requirement to the address listed in the **ADDRESSES** section at the beginning of this preamble by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. Comments also should be submitted to the Office of Management and Budget, Office of Information and Regulatory Affairs, Attention: Desk Officer for FAA, New Executive Office Building, Room 10202, 725 17th Street, N.W., Washington, D.C. 20053.

G. International Compatibility

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to conform to International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. The FAA has reviewed the corresponding ICAO Standards and Recommended Practices and has identified no differences between the FAA’s proposed regulations and the ICAO standards.

H. Environmental Analysis

In accordance with the provisions of regulations issued by the Council on Environmental Quality (40 CFR parts 1500 through 1508), FAA Order 1050.1F identifies

FAA actions that are categorically excluded from preparation of an Environmental Assessment or Environmental Impact Statement under the National Environmental Policy Act (NEPA) in the absence of extraordinary circumstances.

The FAA has determined this NPRM action qualifies for the categorical exclusion identified in paragraph 5–6.6.f of this order and involves no extraordinary circumstances.

In making this determination, the FAA also considered the recent technological advancement regarding fabrication of small and powerful electric motors, actuators, and advance control system technologies that manufacturers could apply in the design and development of new and novel aircraft that are different from the legacy conventional aircraft categories defined in current noise certification standards of 14 CFR part 36.

These diverse concept designs may require additional noise certification requirements that are tailored to these new aircraft types, instead of following the existing requirements for small propeller airplanes, jet transport airplanes, helicopters, or tiltrotor aircraft. The FAA will examine each application and determine whether existing part 36 requirements are appropriate as a noise certification basis. If not, FAA may require Rules of Particular Applicability (RPA) to establish the noise certification basis for these new aircraft designs.

This categorical exclusion finding applies only to this proposed rule. The FAA will initiate a separate review of any final rule.

I. Regulations Affecting Intrastate Aviation in Alaska

Section 1205 of the FAA Reauthorization Act of 1996 (110 Stat. 3213) requires the Administrator, when modifying 14 CFR in a manner affecting intrastate aviation in Alaska, to consider the extent to which Alaska is not served by transportation modes other than aviation, and to establish appropriate regulatory distinctions. Because this proposed rule would apply to operations of powered-lift that could occur throughout the territorial airspace of the United States, it could, if adopted, affect intrastate aviation in

Alaska. The FAA, therefore, specifically requests comments on whether there is justification for applying the proposed rule differently in intrastate operations in Alaska.

X. **Executive Order Determinations**

A. Executive Order 14036, Promoting Competition in the United States Economy

The FAA has analyzed this proposed rule under the principles and criteria of Executive Order (E.O.) 14036, Promoting Competition in the United States Economy. The FAA finds that this action would promote competition by enabling powered-lift to enter the market. The FAA anticipates that powered-lift would compete with surface transportation modes in congested intra-city areas for those passengers that want the benefits of convenient and shorter travel times compared to traditional intra-city travel modes that are currently available. Additionally, the integration of powered-lift into the NAS would foster competition between powered-lift, airplanes, and helicopters with respect to passenger-carrying operations and cargo operations, which would benefit American travelers, consumers, and businesses. By enabling the safe integration of powered-lift into the NAS, the proposed rule would facilitate innovations that foster United States market leadership and market entry to promote competition and economic opportunity and to resist monopolization, while also ensuring safety, promoting equity, and providing oversight of market participants.

B. Executive Order 13985, Advancing Racial Equity and Support for Underserved Communities Through the Federal Government

The FAA has analyzed this proposed rule under the principles and criteria of Executive Order (EO) 13985, Advancing Racial Equity and Support for Underserved Communities Through the Federal Government. Consistent with Executive Order 13985, the FAA has analyzed this proposed rule to assess whether, and to what extent, it may perpetuate systemic barriers to opportunities and benefits for underserved communities

and their members. The FAA finds that the proposed rule to enable the certification of powered-lift pilots and safe powered-lift operations could advance equity for historically disadvantaged communities by expanding their access to goods and services. FAA seeks comment on how this emerging technology could promote equity, and what factors impacting equity, if any, FAA should consider as it enters the marketplace.

C. Executive Order 13132, Federalism

The FAA has analyzed this proposed rule under the principles and criteria of Executive Order (E.O.) 13132, Federalism. The FAA has determined that this action would not have a substantial direct effect on the States, or the relationship between the Federal Government and the States, or on the distribution of power and responsibilities among the various levels of government, and, therefore, would not have federalism implications. The FAA notes that States are already preempted from regulating aviation safety and the efficient use of airspace by aircraft.[519]

D. Executive Order 13175, Consultation and Coordination with Indian Tribal Governments

Consistent with Executive Order 13175, Consultation and Coordination with Indian Tribal Governments,[520] and FAA Order 1210.20, American Indian and Alaska Native Tribal Consultation Policy and Procedures,[521] the FAA ensures that Federally Recognized Tribes (Tribes) are given the opportunity to provide meaningful and timely input regarding proposed Federal actions that have the potential to affect uniquely or significantly their respective Tribes. At this point, the FAA has not identified any unique

---

[519] Congress has vested the FAA with authority to regulate the areas of airspace use, management and efficiency, air traffic control, safety, navigational facilities, pilot training and certification, and aircraft noise at its source. *See, e.g.*, 49 U.S.C. 40103, 44502, and 44701–44735.
[520] 65 FR 67249 (Nov. 6, 2000).
[521] FAA Order No. 1210.20 (Jan. 28, 2004), available at http://www.faa.gov/documentLibrary/media/1210.pdf.

or significant effects, environmental or otherwise, on tribes resulting from this proposed rule.

E. Executive Order 13211, Regulations that Significantly Affect Energy Supply, Distribution, or Use

The FAA analyzed this proposed rule under E.O. 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use. The FAA has determined that it would not be a "significant energy action" under the executive order and would not be likely to have a significant adverse effect on the supply, distribution, or use of energy.

F. Executive Order 13609, Promoting International Regulatory Cooperation

Executive Order 13609, Promoting International Regulatory Cooperation, promotes international regulatory cooperation to meet shared challenges involving health, safety, labor, security, environmental, and other issues and to reduce, eliminate, or prevent unnecessary differences in regulatory requirements. The FAA has analyzed this action under the policies and agency responsibilities of E.O. 13609 and has determined that this action would have no effect on international regulatory cooperation.

XI. **Additional Information**

A. Comments Invited

The FAA invites interested persons to participate in this rulemaking by submitting written comments, data, or views. The FAA also invites comments relating to the economic, environmental, energy, or federalism impacts that might result from adopting the proposals in this document. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. To ensure the docket does not contain duplicate comments, commenters should

submit only one time if comments are filed electronically or commenters should send only one copy of written comments if comments are filed in writing.

The FAA will file in the docket all comments it receives, as well as a report summarizing each substantive public contact with FAA personnel concerning this proposed rulemaking. Before acting on this proposal, the FAA will consider all comments it receives on or before the closing date for comments. The FAA will consider comments filed after the comment period has closed if it is possible to do so without incurring expense or delay. The FAA may change this proposal in light of the comments it receives.

In accordance with 5 U.S.C. 553(c), DOT solicits comments from the public to better inform its rulemaking process. DOT posts these comments, without edit, including any personal information the commenter provides, to https://www.regulations.gov, as described in the system of records notice (DOT/ALL-14 FDMS), which can be reviewed at https://www.dot.gov/privacy.

B. Confidential Business Information

Confidential Business Information (CBI) is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as "PROPIN." The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to the person in the **FOR FURTHER INFORMATION CONTACT**

section of this document. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

C. Electronic Access and Filing

A copy of this NPRM, all comments received, any final rule, and all background material may be viewed online at https://www.regulations.gov using the docket number listed above. A copy of this proposed rule will be placed in the docket. Electronic retrieval help and guidelines are available on the website. It is available 24 hours each day, 365 days each year. An electronic copy of this document may also be downloaded from the Office of the Federal Register's website at https://www.federalregister.gov and the Government Publishing Office's website at https://www.govinfo.gov. A copy may also be found at the FAA's Regulations and Policies website at https://www.faa.gov/regulations_policies.

Copies may also be obtained by sending a request to the Federal Aviation Administration, Office of Rulemaking, ARM-1, 800 Independence Avenue S.W., Washington, D.C. 20591, or by calling (202) 267-9677. Commenters must identify the docket or notice number of this rulemaking.

All documents the FAA considered in developing this proposed rule, including economic analyses and technical reports, may be accessed in the electronic docket for this rulemaking.

D. Small Business Regulatory Enforcement Fairness Act

The Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 requires the FAA to comply with small entity requests for information or advice about compliance with statutes and regulations within its jurisdiction. A small entity with questions regarding this document may contact its local FAA official, or the person listed under the **FOR FURTHER INFORMATION CONTACT** heading at the beginning of

the preamble. To find out more about SBREFA on the Internet, visit https://www.faa.gov/regulations_policies/rulemaking/sbre_act/.

List of Subjects

14 CFR Part 1

Air transportation.

14 CFR Part 43

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

14 CFR Part 60

Airmen, Aviation safety, Reporting and recordkeeping requirements.

14 CFR Part 61

Aircraft, Airmen, Aviation safety, Recreation and recreation areas, Reporting and recordkeeping requirements, Security measures, Teachers.

14 CFR Part 91

Agriculture, Air carriers, Air taxis, Air traffic control, Aircraft, Airmen, Airports, Aviation Safety, Charter flights, Freight, Reporting and recordkeeping requirements, Security measures, Transportation.

14 CFR Part 97

Air traffic control, Airports, Navigation (air), Weather.

14 CFR Part 111

Administrative practice and procedure, Air carriers, Air taxis, Aircraft, Airmen, Alcohol abuse, Aviation safety, Charter flights, Drug abuse, Reporting and recordkeeping requirements.

14 CFR Part 135

Air taxis, Aircraft, Airmen, Aviation safety, Reporting and recordkeeping requirements.

14 CFR Part 136

Air transportation, Aircraft, Aviation safety, National parks, Recreation and recreation areas, Reporting and recordkeeping requirements.

14 CFR Part 141

Airmen, Educational facilities, Reporting and recordkeeping requirements, Schools.

14 CFR Part 142

Airmen, Educational facilities, Reporting and recordkeeping requirements, Schools, Teachers.

14 CFR Part 194

Air carriers, Air taxis, Air traffic control, Air transportation, Aircraft, Airmen, Airports, Aviation safety, Charter flights, Freight, Incorporation by reference, Navigation (air), Recreation and recreation areas, Reporting and recordkeeping requirements, Teachers, Schools.

The Proposed Amendment

For the reasons discussed in the preamble, the Federal Aviation Administration proposes to amend chapter I of title 14, Code of Federal Regulations as follows:

PART 1 – DEFINITIONS AND ABBREVIATIONS

1. The authority citation for part 1 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40113, 44701.

2. Amend § 1.1 by revising the introductory text to read as follows:

§ 1.1 General definitions.

As used in this chapter, unless the context requires otherwise:

* * * * *

3. Amend § 1.2 by revising the introductory text to read as follows:

§ 1.2 Abbreviations and symbols.

In this chapter:

* * * * *

4. Amend § 1.3 by revising paragraphs (a) introductory text and (b) introductory text to read as follows:

§ 1.3 Rules of construction.

(a) In this chapter, unless the context requires otherwise:

* * * * *

(b) In this chapter, the word:

* * * * *

PART 43—MAINTENANCE, PREVENTIVE MAINTENANCE, REBUILDING, AND ALTERATION

5. The authority citation for part 43 continues to read as follows:

Authority: 42 U.S.C. 7572; 49 U.S.C. 106(f), 106(g), 40105, 40113, 44701-44702, 44704, 44707, 44709, 44711, 44713, 44715, 45303.

6. Amend § 43.1 by adding paragraph (e) to read as follows:

§ 43.1 Applicability.

* * * * *

(e) Additional applicability of maintenance provisions for powered-lift is set forth in part 194 of this chapter.

PART 60 – FLIGHT SIMULATION TRAINING DEVICE INITIAL AND CONTINUING QUALIFICATION AND USE

7. The authority citation for part 60 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40113, and 44701; Pub. L. 111-216, 124 Stat. 2348 (49 U.S.C. 44701 note).

8. Amend § 60.1 by revising paragraph (a) to read as follows:

§ 60.1 Applicability.

(a) This part prescribes the rules governing the initial and continuing qualification and use of all aircraft flight simulation training devices (FSTD) used for meeting training, evaluation, or flight experience requirements of this chapter for flight crewmember certification or qualification. Additional requirements for FSTD representing powered-lift are set forth in part 194 of this chapter.

* * * * *

PART 61—CERTIFICATION: PILOTS, FLIGHT INSTRUCTORS, AND GROUND INSTRUCTORS

9. The authority citation for part 61 is revised to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40113, 44701-44703, 44707, 44709-44711, 44729, 44903, 45102-45103, and 45301-45302; sec. 2307, Pub. L. 114-190, 130 Stat. 615 (49 U.S.C. 44703 note); and sec. 318, Pub. L. 115–254, 132 Stat. 3186 (49 U.S.C. 44703 note).

10. In part 61, revise all references to "cross-country flight time" to read "cross-country time".

11. Amend § 61.1 by:

a. Revising paragraph (a); and

b. In the definition of "Cross-country time" in paragraph (b), revising paragraph (i) introductory text.

The revision reads as follows:

§ 61.1 Applicability and definitions.

(a) Except as provided in parts 107 and 194 of this chapter, this part prescribes:

(1) The requirements for issuing pilot, flight instructor, and ground instructor certificates and ratings; the conditions under which those certificates and ratings are necessary; and the privileges and limitations of those certificates and ratings.

(2) The requirements for issuing pilot, flight instructor, and ground instructor authorizations; the conditions under which those authorizations are necessary; and the privileges and limitations of those authorizations.

(3) The requirements for issuing pilot, flight instructor, and ground instructor certificates and ratings for persons who have taken courses approved by the Administrator under other parts of this chapter.

(b) * * *

Cross-country time * * *

(i) Except as provided in paragraphs (ii) through (vii) of this definition, time acquired during flight–

* * * * *

12. Amend § 61.3 by revising paragraphs (e)(1) and (2), (f)(2)(i) and (ii), and (g)(2)(i) and (ii) to read as follows:

§ 61.3 Requirement for certificates, ratings, and authorizations.

* * * * *

(e) * * *

(1) The appropriate aircraft category, class, type (if a class or type rating is required), and instrument rating on that person's pilot certificate for any airplane, helicopter, or powered-lift being flown;

(2) An airline transport pilot certificate with the appropriate aircraft category, class, and type rating (if a class or type rating is required) for the aircraft being flown;

* * * * *

(f) * * *

(2) * * *

(i) Holds a pilot certificate with category and class ratings (if a class rating is required) for that aircraft and an instrument rating for that category aircraft;

(ii) Holds an airline transport pilot certificate with category and class ratings (if a class rating is required) for that aircraft; or

* * * * *

(g) * * *

(2) * * *

(i) Holds a pilot certificate with category and class ratings (if a class rating is required) for that aircraft and an instrument rating for that category aircraft;

(ii) Holds an airline transport pilot certificate with category and class ratings (if a class rating is required) for that aircraft; or

* * * * *

13. Amend § 61.5 by:

a. Redesignating paragraphs (b)(7)(iii) and (iv) as paragraphs (b)(7)(iv) and (b)(9), respectively; and

b. Adding new paragraph (b)(7)(iii).

The addition reads as follows:

§ 61.5 Certificates and ratings issued under this part.

* * * * *

(b) * * *

(7) * * *

(iii) Powered-lift.

* * * * *

14. Amend § 61.31 by:

a. Redesignating paragraph (a)(3) as paragraph (a)(4);

b. Adding new paragraph (a)(3); and

c. Revising paragraph (l)(1).

The revision and addition read as follows:

§ 61.31 Type rating requirements, additional training, and authorization requirements.

(a) * * *

(3) Powered-lift.

* * * * *

(l) * * *

(1) This section does not require a category and class rating for aircraft that is not identified as an aircraft under § 61.5(b).

* * * * *

15. Amend § 61.39 by revising paragraph (a)(3) to read as follows:

§ 61.39 Prerequisites for practical tests.

(a) * * *

(3) Have satisfactorily accomplished the required training and obtained the aeronautical experience prescribed by this part for the certificate or rating sought, and:

(i) If applying for the practical test with flight time accomplished under § 61.159(c), present a copy of the records required by § 135.63(a)(4)(vi) and (x) of this chapter; or

(ii) If applying for a practical test for the issuance of an initial category and class rating (if a class rating is required) at the private, commercial, or airline transport pilot certificate level in an aircraft that requires a type rating or a flight simulator or flight training device that represents an aircraft that requires a type rating, meet the eligibility requirements for the type rating or already hold the type rating on their pilot certificate;

* * * * *

16. Amend § 61.43 by adding paragraph (g) to read as follows:

§ 61.43 Practical tests: General procedures.

* * * * *

(g) A practical test for an airline transport pilot (ATP) certificate with category and class rating (if a class rating is required) in an aircraft that requires a type rating or in a flight simulation training device that represents an aircraft that requires a type rating includes the same tasks and maneuvers as a practical test for a type rating.

17. Amend § 61.47 by revising the section heading and adding paragraph (d) to read as follows:

§ 61.47 Status and responsibilities of an examiner who is authorized by the Administrator to conduct practical tests.

* * * * *

(d) An examiner may not conduct a practical test for the issuance of an initial category and class rating (if a class rating is required) at the private, commercial, or airline transport pilot certificate level in an aircraft that requires a type rating or a flight simulator or flight training device that represents an aircraft that requires a type rating unless:

(1) The applicant meets the eligibility requirements for a type rating in that aircraft or already holds that type rating on their certificate; and

(2) The practical test contains the tasks and maneuvers for a type rating specified in the areas of operation at the airline transport pilot certification level.

18. Amend § 61.51 by revising paragraph (f)(2) to read as follows:

§ 61.51 Pilot logbooks.

* * * * *

(f) * * *

(2) Holds the appropriate category, class, and instrument rating (if a class or instrument rating is required) for the aircraft being flown, and more than one pilot is required under the type certification of the aircraft or the regulations under which the flight is being conducted; or

* * * * *

19. Amend § 61.55 by revising paragraph (a) to read as follows:

§ 61.55 Second-in-command qualifications.

(a) A person may serve as a second-in-command of an aircraft type certificated for more than one required pilot flight crewmember or in operations requiring a second-in-command pilot flight crewmember only if that person meets the following requirements:

(1) Holds at least a private pilot certificate with the appropriate category and class rating;

(2) Holds an instrument rating or privilege that applies to the aircraft being flown if the flight is under IFR;

(3) Holds at least a pilot type rating for the aircraft being flown unless the flight will be conducted as domestic flight operations within the United States airspace; and

(4) If serving as second-in-command of a powered-lift, satisfies the requirements specified in § 194.209(a) of this chapter.

* * * * *

20. Amend § 61.57 by revising paragraphs (a)(1)(ii), (b)(1)(ii), and (g)(1) and (4) to read as follows:

§ 61.57 Recent flight experience: Pilot in command.

(a) * * *

(1) * * *

(ii) The required takeoffs and landings were performed in an aircraft of the same category, class, and type (if a class or type rating is required), and, if the aircraft to be flown is an airplane with a tailwheel, the takeoffs and landings must have been made to a full stop in an airplane with a tailwheel.

* * * * *

(b) * * *

(1) * * *

(ii) The required takeoffs and landings were performed in an aircraft of the same category, class, and type (if a class or type rating is required).

* * * * *

(g) * * *

(1) An Examiner who is qualified to perform night vision goggle operations in that same aircraft category and class (if a class rating is required);

* * * * *

(4) An authorized flight instructor who is qualified to perform night vision goggle operations in that same aircraft category and class (if a class rating is required);

* * * * *

§ 61.63 [Amended]

21. Amend § 61.63 by removing and reserving paragraph (h).

22. Amend § 61.64 by revising paragraphs (a)(1) and (e), (f) introductory text, and (g)(1) to read as follows:

§ 61.64 Use of a flight simulator and flight training device.

(a) * * *

(1) Must represent the category, class, and type (if a class or type rating is applicable) for the rating sought, except that a person may not use a flight simulator or flight training device representing an aircraft requiring a type rating for any portion of the practical test without seeking a type rating for that aircraft; and

* * * * *

(e) Except as provided in paragraph (f) of this section, if a powered-lift is not used during the practical test for a type rating in a powered-lift (except for preflight inspection), an applicant must accomplish the entire practical test in a Level C or higher

flight simulator and have 500 hours of flight time in the type of powered-lift for which the rating is sought.

(f) If the applicant does not meet one of the experience requirements of paragraphs (b)(1) through (5), paragraphs (c)(1) through (5), paragraphs (d)(1) through (4), or paragraph (e) of this section, as appropriate to the type rating sought, then—

* * * * *

(g) * * *

(1) Performs 25 hours of flight time in an aircraft of the appropriate category, class, and type for which the limitation applies under the direct observation of the pilot in command who holds a category, class (if a class rating is required), and type rating, without limitations, for the aircraft;

* * * * *

23. Amend § 61.109 by revising paragraph (e)(5) introductory text to read as follows:

§ 61.109 Aeronautical experience.

* * * * *

(e) * * *

(5) 10 hours of solo flight time in a powered-lift consisting of at least--

* * * * *

24. Amend § 61.163 by adding paragraphs (c), (d), and (e) to read as follows:

§ 61.163 Aeronautical experience: Powered-lift category rating.

* * * * *

(c) Flight time logged under § 61.159(c) may be counted toward the 1,500 hours of total time as a pilot required by paragraph (a) of this section and the flight time requirements of paragraphs (a)(1), (2), and (4) of this section.

(d) An applicant who credits time under paragraph (c) of this section is issued an airline transport pilot certificate with the limitation "Holder does not meet the pilot in command aeronautical experience requirements of ICAO," as prescribed under Article 39 of the Convention on International Civil Aviation.

(e) An applicant is entitled to an airline transport pilot certificate without the ICAO limitation specified under paragraph (d) of this section when the applicant presents satisfactory evidence of having met the ICAO requirements under paragraph (d) of this section and otherwise meets the aeronautical experience requirements of this section.

§ 61.165 [Amended]

25. Amend § 61.165 by removing paragraph (g).

26. Amend § 61.167 by revising the introductory text of paragraph (a)(2) to read as follows:

§ 61.167 Airline transport pilot privileges and limitations.

(a) * * *

(2) A person who holds an airline transport pilot certificate and has met the aeronautical experience requirements of § 61.159, § 61.161, or § 61.163, and the age requirements of § 61.153(a)(1) may instruct--

* * * * *

PART 91—GENERAL OPERATING AND FLIGHT RULES

27. The authority citation for part 91 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40101, 40103, 40105, 40113, 40120, 44101, 44111, 44701, 44704, 44709, 44711, 44712, 44715, 44716, 44717, 44722, 46306, 46315, 46316, 46504, 46506-46507, 47122, 47508, 47528-47531, 47534, Pub. L. 114-190, 130 Stat. 615 (49 U.S.C. 44703 note); articles 12 and 29 of the Convention on International Civil Aviation (61 Stat. 1180), (126 Stat. 11).

28. Amend § 91.1 by revising paragraph (d) and adding paragraph (g) to read as follows:

§ 91.1 Applicability.

* * * * *

(d) This part also establishes requirements for operators to take actions to support the continued airworthiness of each aircraft.

* * * * *

(g) Additional requirements for powered-lift operations are set forth in part 194 of this chapter.

§ 91.205 [Amended]

29. Amend § 91.205 by removing the word "category" after the word "standard" wherever it appears.

30. Amend § 91.903 by revising paragraph (a) to read as follows:

§ 91.903 Policy and procedures.

(a) The Administrator may issue a certificate of waiver authorizing the operation of aircraft in deviation from any rule listed in this subpart or any rule listed in this subpart as modified by subpart C of part 194 of this chapter if the Administrator finds that the proposed operation can be safely conducted under the terms of that certificate of waiver.

* * * * *

31. Amend § 91.1053 by revising paragraph (a)(2)(i) to read as follows:

§ 91.1053 Crewmember experience.

(a) * * *

(2) * * *

(i) Pilot in command – Airline transport pilot and applicable type ratings not limited to VFR only.

* * * * *

§ 91.1115 [Amended]

32. Amend § 91.1115(b)(1) by removing the word "airplane" and adding in its place the word "aircraft".

PART 97 - STANDARD INSTRUMENT PROCEDURES

33. The authority citation for part 97 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40103, 40106, 40113, 40114, 40120, 44502, 44514, 44701, 44719, and 44721-44722.

34. Amend § 97.1 by adding paragraph (c) to read as follows:

§ 97.1 Applicability.

* * * * *

(c) Additional applicability of copter procedures for powered-lift is set forth in part 194 of this chapter.

PART 111—PILOT RECORDS DATABASE

35. The authority citation for part 111 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40101, 40113, 44701, 44703, 44711, 46105, 46301.

36. Amend § 111.1 by revising paragraph (b)(4) introductory text and adding paragraph (b)(4)(iii) to read as follows:

§ 111.1 Applicability.

* * * * *

(b) * * *

(4) Each operator that operates two or more aircraft described in paragraph (b)(4)(i), (ii), or (iii) of this section, in furtherance of or incidental to a business, solely pursuant to the general operating and flight rules in part 91 of this chapter, or that operates aircraft pursuant to a Letter of Deviation Authority issued under § 125.3 of this chapter.

* * * * *

(iii) Large powered-lift.

* * * * *

PART 135—OPERATING REQUIREMENTS: COMMUTER AND ON DEMAND OPERATIONS AND RULES GOVERNING PERSONS ON BOARD SUCH AIRCRAFT

37. The authority citation for part 135 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40113, 41706, 44701-44702, 44705, 44709, 44711-44713, 44715-44717, 44722, 44730, 45101-45105; Pub. L. 112-95, 126 Stat. 58 (49 U.S.C. 44730).

38. Amend § 135.1 by adding paragraph (d) to read as follows:

§ 135.1 Applicability.

* * * * *

(d) Additional requirements for powered-lift operations, training, checking, and testing, are set forth in part 194 of this chapter.

39. Amend § 135.100 by:

a. Adding paragraph (d); and

b. Removing the note at the end of the section.

The addition reads as follows:

§ 135.100 Flight crewmember duties.

* * * * *

(d) For purposes of this section, *taxi* is defined as "movement of an aircraft under its own power on the surface of an airport".

40. Amend § 135.152 by revising paragraph (j) to read as follows:

§ 135.152 Flight data recorders.

* * * * *

(j) For all turbine-engine-powered airplanes with a seating configuration, excluding any required crewmember seat, of 10 to 30 passenger seats, that are manufactured after August 19, 2002, the parameters listed in paragraphs (h)(1) through (88) of this section must be recorded within the ranges, accuracies, resolutions, and recording intervals specified in appendix F to this part.

* * * * *

41. Amend § 135.179 by revising paragraph (b)(1) to read as follows:

§ 135.179 Inoperable instruments and equipment.

* * * * *

(b) * * *

(1) Instruments and equipment that are either specifically or otherwise required by the airworthiness requirements under which the aircraft is type certificated and which are essential for safe operations under all operating conditions.

* * * * *

42. Amend § 135.243 by:

a. Revising paragraph (a)(1);

b. Adding paragraph (a)(3);

c. Revising paragraphs (b)(1) and (4);

d. Adding paragraph (b)(5);

e. Revising paragraphs (c)(1) and (4); and

f. Adding paragraph (c)(5).

The revisions and additions read as follows:

§ 135.243 Pilot in command qualifications.

(a) * * *

(1) Of a turbojet airplane, of an airplane having a passenger-seat configuration, excluding each crewmember seat, of 10 seats or more, or of a multiengine airplane in a

commuter operation as defined in part 110 of this chapter, unless that person holds an airline transport pilot certificate with appropriate category and class ratings and, if required, an appropriate type rating for that airplane.

* * * * *

(3) Of a turbojet-powered powered-lift, of a powered-lift having a passenger-seat configuration, excluding each crewmember seat, of 10 seats or more, or of a powered-lift in a commuter operation as defined in part 110 of this chapter, unless that person holds an airline transport pilot certificate with appropriate category rating, and appropriate type rating not limited to VFR for that powered-lift.

(b) * * *

(1) Holds at least a commercial pilot certificate with appropriate category and class ratings, an appropriate type rating for that aircraft, if required, and for a powered-lift, a type rating for that aircraft not limited to VFR; and

* * * * *

(4) For helicopter operations conducted VFR over-the-top, holds a helicopter instrument rating, or an airline transport pilot certificate with a category and class rating for that aircraft, not limited to VFR; or

(5) For a powered-lift, holds an instrument-powered-lift rating or an airline transport pilot certificate with a powered-lift category rating.

(c) * * *

(1) Holds at least a commercial pilot certificate with appropriate category and class ratings, an appropriate type rating for that aircraft, if required, and for a powered-lift, a type rating for that aircraft not limited to VFR; and

* * * * *

(4) For a helicopter, holds a helicopter instrument rating, or an airline transport pilot certificate with a category and class rating for that aircraft, not limited to VFR; or

(5) For a powered-lift, holds an instrument-powered-lift rating or an airline transport pilot certificate with a powered-lift category rating.

* * * * *

§ 135.244 [Amended]

43. Amend § 135.244 by removing the number "119" in the introductory text of paragraph (a) and adding in its place the number "110".

44. Amend § 135.245 by revising the introductory text of paragraph (c)(1) to read as follows:

§ 135.245 Second in command qualifications.

* * * * *

(c) * * *

(1) *Use of an airplane, powered-lift, or helicopter for maintaining instrument experience.* Within the 6 calendar months preceding the month of the flight, that person performed and logged at least the following tasks and iterations in-flight in an airplane, powered-lift, or helicopter, as appropriate, in actual weather conditions, or under simulated instrument conditions using a view-limiting device:

* * * * *

45. Amend § 135.293 by:

a. Revising paragraphs (a)(9), (b), and (c); and

b. Removing and reserving paragraph (h).

The revisions read as follows:

§ 135.293 Initial and recurrent pilot testing requirements.

(a) * * *

(9) For rotorcraft and powered-lift pilots, procedures for aircraft handling in flat-light, whiteout, and brownout conditions, including methods for recognizing and avoiding those conditions.

(b) No certificate holder may use a pilot, nor may any person serve as a pilot, in any aircraft unless, since the beginning of the 12th calendar month before that service, that pilot has passed a competency check given by the Administrator or an authorized check pilot in that class of aircraft, if single-engine airplane other than turbojet, or that type of aircraft, if helicopter, multiengine airplane, turbojet airplane, or powered-lift to determine the pilot's competence in practical skills and techniques in that aircraft or class of aircraft. The extent of the competency check shall be determined by the Administrator or authorized check pilot conducting the competency check. The competency check may include any of the maneuvers and procedures currently required for the original issuance of the particular pilot certificate required for the operations authorized and appropriate to the category, class and type of aircraft involved. For the purposes of this paragraph (b), type, as to an airplane means any one of a group of airplanes determined by the Administrator to have a similar means of propulsion, the same manufacturer, and no significantly different handling or flight characteristics. For the purposes of this paragraph (b), type, as to a helicopter, means a basic make and model.

(c) Each competency check given in a rotorcraft or powered-lift must include a demonstration of the pilot's ability to maneuver the rotorcraft or powered-lift solely by reference to instruments. The check must determine the pilot's ability to safely maneuver the rotorcraft or powered-lift into visual meteorological conditions following an inadvertent encounter with instrument meteorological conditions. For competency checks in non-IFR-certified rotorcraft or powered-lift, the pilot must perform such maneuvers as are appropriate to the rotorcraft's or powered-lift's installed equipment, the certificate holder's operations specifications, and the operating environment.

* * * * *

46. Amend § 135.297 by revising paragraphs (c)(1)(i) and (ii) and (g)(3) to read as follows:

§ 135.297 Pilot in command: Instrument proficiency check requirements.

* * * * *

(c) * * *

(1) * * *

(i) For a pilot in command of an aircraft under § 135.243(a), include the procedures and maneuvers for an airline transport pilot certificate in the particular type of aircraft, if appropriate; and

(ii) For a pilot in command of an aircraft under § 135.243(c), include the procedures and maneuvers for a commercial pilot certificate with an instrument rating and, if required, for the appropriate type rating.

* * * * *

(g) * * *

(3) Each pilot taking the autopilot check must show that, while using the autopilot:

(i) The airplane or powered-lift can be operated as proficiently as it would be if a second in command were present to handle air-ground communications and air traffic control instructions. The autopilot check need only be demonstrated once every 12 calendar months during the instrument proficiency check required under paragraph (a) of this section.

(ii) On and after [DATE 6 MONTHS AFTER THE EFFECTIVE DATE OF FINAL RULE], rotorcraft can be operated as proficiently as it would be if a second in command were present to handle air-ground communications and air traffic control instructions. The autopilot check need only be demonstrated once every 12 calendar months during the instrument proficiency check required under paragraph (a) of this section.

47. Effective [DATE 6 MONTHS AFTER THE EFFECTIVE DATE OF FINAL RULE], further amend § 135.297 by revising paragraph (g)(3) to read as follows:

§ 135.297 Pilot in command: Instrument proficiency check requirements.

* * * * *

(g) * * *

(3) Each pilot taking the autopilot check must show that, while using the autopilot, the aircraft can be operated as proficiently as it would be if a second in command were present to handle air-ground communications and air traffic control instructions. The autopilot check need only be demonstrated once every 12 calendar months during the instrument proficiency check required under paragraph (a) of this section.

PART 136 - COMMERCIAL AIR TOURS AND NATIONAL PARKS AIR TOUR MANAGEMENT

48. The authority citation for part 136 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 40119, 44101, 44701, 44701-44702, 44705, 44709-44711, 44713, 44716-44717, 44722, 44901, 44903-44904, 44912, 46105.

49. Amend § 136.1 by adding paragraph (f) to read as follows:

§ 136.1 Applicability and definitions.

* * * * *

(f) Additional requirements for powered-lift operations are set forth in part 194 of this chapter.

PART 141 - PILOT SCHOOLS

50. The authority citation for part 141 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40113, 44701-44703, 44707, 44709, 44711, 45102-45103, 45301-45302.

51. Revise § 141.1 to read as follows:

§ 141.1 Applicability.

This part prescribes the requirements for issuing pilot school certificates, provisional pilot school certificates, and associated ratings, and the general operating rules applicable to a holder of a certificate or rating issued under this part. Additional requirements for pilot schools seeking to provide training courses for powered-lift certification and ratings are set forth in part 194 of this chapter.

PART 142 - TRAINING CENTERS

52. The authority citation for part 142 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40113, 40119, 44101, 44701-44703, 44705, 44707, 44709-44711, 45102-45103, 45301-45302.

53. Amend § 142.1 by adding paragraph (d) to read as follows:

§ 142.1 Applicability.

* * * * *

(d) Additional requirements for training centers seeking to provide curriculums for powered-lift certification and ratings are set forth in part 194 of this chapter.

54. Amend § 142.11 by revising paragraph (d)(2)(iii) to read as follows:

§ 142.11 Application for issuance or amendment.

* * * * *

(d) * * *

(2) * * *

(iii) For each flight simulator or flight training device, the make model, and series of aircraft or the set of aircraft being simulated and the qualification level assigned;

* * * * *

55. Amend § 142.47 by revising paragraphs (a)(5)(ii) and (c)(2)(ii) to read as follows:

§ 142.47 Training center instructor eligibility requirements.

(a) * * *

(5) * * *

(ii) If instructing in flight simulator or flight training device that represents an aircraft requiring a type rating or if instructing in a curriculum leading to the issuance of an airline transport pilot certificate or an added rating to an airline transport pilot certificate, meets the aeronautical experience requirements of § 61.159, § 61.161, or § 61.163 of this chapter, as applicable. A person employed as an instructor and instructing in a flight simulator or flight training device that represents a rotorcraft requiring a type rating is not required to meet the aeronautical experience requirements of this paragraph (a)(5)(ii) if:

(A) The person is not instructing in a curriculum leading to the issuance of an airline transport pilot certificate or an added rating to an airline transport pilot certificate; and

(B) The person was employed and met the remaining requirements of this section on [EFFECTIVE DATE OF FINAL RULE]; or

* * * * *

(c) * * *

(2) * * *

(ii) That is accepted by the Administrator as being of equivalent difficulty, complexity, and scope as the tests provided by the Administrator for the applicable flight instructor and instrument flight instructor knowledge tests to the aircraft category in which they are instructing.

§ 142.53 [Amended]

56. Amend § 142.53 in paragraphs (b)(2)(i) and (b)(3)(i) by removing the word "airplane" and adding in its place the word "aircraft".

§ 142.57 [Amended]

57. Amend § 142.57(c) by removing the word "Airplanes" and adding in its place the word "Aircraft".

58. Under the authority of 49 U.S.C. 106(f), add subchapter L, consisting of part 194, to read as follows:

Subchapter L – Other Special Federal Aviation Regulations

PART 194 – SPECIAL FEDERAL AVIATION REGULATION NO. 120—POWERED-LIFT: PILOT CERTIFICATION AND TRAINING; OPERATIONS REQUIREMENTS

Sec.

Subpart A – General

194.101 Applicability.
194.103 Definitions.
194.105 Qualification of powered-lift FSTDs.
194.107 Expiration.
194.109 Incorporation by reference.

Subpart B – Certification, Training, and Qualification Requirements for Pilots and Flight Instructors

194.201 Alternate definition of cross-country time.
194.203 Alternate qualification requirements for certain flight instructors.
194.205 Limitations on flight training privileges for holders of airline transport pilot certificates under a part 135 of this chapter approved training program.
194.207 Alternate requirement for practical tests and training in a powered-lift.
194.209 Additional qualification requirements for certain pilots serving as second-in-command.
194.211 Alternate eligibility requirements for a person seeking a powered-lift type rating.
194.213 Alternate endorsement requirements for certain persons seeking a powered-lift rating.
194.215 Applicability of alternate aeronautical experience and logging requirements for commercial pilot certification and a powered-lift instrument rating.
194.217 Test pilots: Alternate aeronautical experience and logging requirements for a commercial pilot certificate with a powered-lift category rating.
194.219 Instructor pilots: Alternate aeronautical experience and logging requirements for a commercial pilot certificate with a powered-lift category rating.
194.221 Initial cadre of instructors: Alternate aeronautical experience and logging requirements for a commercial pilot certificate with a powered-lift category rating.
194.223 Pilots receiving training under an approved training program: Alternate requirements for a commercial pilot certificate with a powered-lift category rating.
194.225 Test pilots: Alternate aeronautical experience and logging requirements for an instrument-powered-lift rating.

194.227 Instructor pilots: Alternate aeronautical experience and logging requirements for an instrument-powered-lift rating.
194.229 Initial cadre of instructors: Alternate aeronautical experience and logging requirements for an instrument-powered-lift rating.
194.231 Pilots receiving training under an approved training program: Alternate requirements for an instrument-powered-lift rating.
194.233 Alternate means to satisfy the cross-country aeronautical experience requirements for a commercial pilot certificate with a powered-lift category rating.
194.235 Alternate means to satisfy the cross-country aeronautical experience requirements for an instrument-powered-lift rating.
194.237 Alternate means to satisfy the cross-country aeronautical experience requirements for a private pilot certificate with a powered-lift category rating.
194.239 Alternate means to satisfy minimum curriculum content in certain appendices to part 141 of this chapter.
194.241 Alternate qualification requirements for chief instructors, assistant chief instructors, and check instructors.
194.243 Pilot certification through completion of training, testing, and checking part 135 of this chapter.
194.245 Pilot qualification and program management requirements to operate powered-lift under subpart K of part 91 of this chapter.
194.247 Pilot qualification requirements to operate powered-lift under part 135 of this chapter.
194.249 References to class in parts 135, 141, and 142 of this chapter.
194.251 Alternate means to satisfy minimum curriculum content in training courses under part 142 of this chapter.

Subpart C - Requirements for Persons Operating Powered-lift

194.301 Applicability.
194.302 Airplane provisions under part 91 of this chapter applicable to powered-lift.
194.303 Rotorcraft and helicopter provisions under part 91 of this chapter applicable to powered-lift.
194.304 IFR takeoff, approach, and landing minimums.
194.305 ATC transponder and altitude reporting equipment and use.
194.306 Applicability of copter procedures under part 97 of this chapter to powered-lift.
194.307 Airplane provisions under part 135 of this chapter applicable to powered-lift.
194.308 Rotorcraft and helicopter provisions under part 135 of this chapter applicable to powered-lift.
194.309 Applicability of rules for eligible on-demand operations.
194.310 Applicability of national air tour safety standards under part 136 of this chapter to powered-lift.
194.311 Applicability of flight instruction; Simulated instrument flight.
194.312 Powered-lift in vertical-lift flight mode, flight recorder specifications under part 91 of this chapter.
194.313 Powered-lift in wing-borne flight mode, flight recorder specifications under part 91 of this chapter.
194.314 Powered-lift in vertical-lift flight mode, flight recorder specifications under part 135 of this chapter.
194.315 Powered-lift in wing-borne flight mode, flight recorder specification under part 135 of this chapter.

Subpart D - Maintenance, Preventive Maintenance, Rebuilding, and Alteration Requirements for Powered-lift under Part 43 of this Chapter

194.401 Applicability.
194.402 Maintenance provisions.

Authority: 42 U.S.C. 7572; 49 U.S.C. 106(f), 106(g), 40113, 44701-44705, 44707, 44712, 44713, 44715, 44716, and 44722.

Subpart A – General

§ 194.101 Applicability.

(a) The Special Federal Aviation Regulation (SFAR) in this part prescribes:

(1) Certain requirements for that may be satisfied in lieu of the requirements of part 61 of this chapter for persons seeking a powered-lift pilot certificate and rating, the conditions under which those certificates and ratings are necessary, and the privileges and limitations of those certificates and ratings;

(2) The general operating rules applicable to all persons operating powered-lift, including those an operator must meet to conduct powered-lift operations under parts 91, 135, and 136 of this chapter;

(3) The requirements for persons conducting training, testing, and checking utilizing a powered-lift or flight simulation training device (FSTD) representing a powered-lift under parts 135, 141, and 142 of this chapter; and

(4) The requirements for persons conducting maintenance, preventative maintenance, rebuilds, alterations, or inspections on powered-lift pursuant to part 43 of this chapter.

(b) In addition to the requirements in this part, the following parts continue to apply to those persons described in paragraph (a) of this section unless otherwise specified in this part: parts 43, 60, 61, 91, 97, 135, 136, 141, and 142 of this chapter.

§ 194.103 Definitions.

For the purpose of this part:

Extended over-water operation means a powered-lift operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline and more than 50 nautical miles from an off-shore heliport structure under part 91 or 135 of this chapter.

Heliport means an area of land, water, or structure used or intended to be used for the landing and takeoff of helicopters and powered-lift.

Instructor pilot means a pilot employed or used by a manufacturer of a powered-lift to conduct operations of the powered-lift for the purpose of developing a proposed training curriculum and providing crew training.

Manufacturer means any person who holds, or is an applicant for, a type or production certificate for an aircraft. An amateur builder under § 21.191(g) of this chapter, builder of a kit aircraft under § 21.191(h) of this chapter, or the holder of a restricted category type certificate are not considered manufacturers for the purpose of this part.

Test pilot means a pilot employed or used by a manufacturer of a powered-lift to conduct operations of the powered-lift for the purpose of research and development and showing compliance with this chapter.

§ 194.105 Qualification of powered-lift FSTDs.

For flight simulation training devices (FSTDs) representing powered-lift for which qualification standards have not been issued under part 60 of this chapter, the applicable requirements will be the portions of the flight simulation training device qualification performance standards contained in appendices A through D to part 60 of this chapter that are found by the Federal Aviation Administration (FAA) Administrator (Administrator) to be appropriate for the powered-lift and applicable to a specific type design, or such FSTD qualification criteria as the Administrator may find provide an equivalent level of safety to those FSTD qualification standards.

§ 194.107 Expiration.

This part, consisting of Special Federal Aviation Regulation (SFAR) No. 120, will remain in effect until [10 YEARS FROM THE FINAL RULE EFFECTIVE DATE]. The FAA may amend, rescind, or extend the SFAR as necessary.

§ 194.109 Incorporation by reference.

Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. All approved incorporation by reference (IBR) material is available for inspection at the FAA and at the National Archives and Records Administration (NARA). Contact the FAA's Office of Rulemaking, 800 Independence Avenue, SW, Washington, DC 20590; phone: (202) 267-9677. For information on the availability of this material at NARA, visit www.archives.gov/federal-register/cfr/ibr-locations.html or email fr.inspection@nara.gov. The material may be obtained from the sources in the following paragraphs:

(a) RTCA, Inc., 1150 18th St NW Suite 910, Washington, DC 20036; phone: (202) 833-9339; website: www.rtca.org/products.

(1) Section 2 of RTCA DO-309, Minimum Operational Performance Standards (MOPS) for Helicopter Terrain Awareness and Warning System (HTAWS) Airborne Equipment (Mar. 13, 2008); into §§ 194.302; 194.307; and 194.308.

(2) [Reserved]

(b) U.S. Department of Transportation, Subsequent Distribution Office, DOT Warehouse M30, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785; phone (301) 322-5377; www.faa.gov/aircraft/air_cert/design_approvals/tso/ (select the link “Search Technical Standard Orders”).

(1) Technical Standard Order (TSO)-C194, Helicopter Terrain Awareness and Warning System (Dec. 17, 2008); into §§ 194.302; 194.307; and 194.308.

(2) [Reserved]

Subpart B – Certification, Training, and Qualification Requirements for Pilots and Flight Instructors

§ 194.201 Alternate definition of cross-country time.

Notwithstanding the cross-country time definitions in § 61.1(b) of this chapter, a person may log flight time in a powered-lift as cross-country time provided the time was acquired during a flight—

(a) That includes a point of landing that was at least a straight-line distance of more than 25 nautical miles from the original point of departure; and

(b) That involves the use of dead reckoning, pilotage, electronic navigation aids, radio aids, or other navigation systems to navigate to the landing point.

§ 194.203 Alternate qualification requirements for certain flight instructors.

(a) *Instructor pilots at a manufacturer.* In addition to the provisions specified in § 61.3(d)(3) of this chapter, a flight instructor certificate issued under part 61 of this chapter is not necessary to conduct flight training if the training is given by an instructor pilot in a powered-lift at the manufacturer, provided the training is conducted in accordance with the manufacturer's training curriculum and is given to either—

(1) A test pilot; or

(2) A person authorized by the Administrator to serve as an initial check pilot, chief instructor, assistant chief instructor, or training center evaluator for the purpose of initiating training in a powered-lift under an approved training program under part 135, 141, or 142 of this chapter, as appropriate.

(b) *Flight instructors under part 135 of this chapter.* Notwithstanding the requirement in § 61.3(d)(3)(ii) of this chapter, a person must hold a flight instructor certificate with the appropriate powered-lift ratings to conduct training in accordance with a training curriculum approved to meet the requirements of § 194.243(a)(1).

§ 194.205 Limitations on flight training privileges for holders of airline transport pilot certificates under a part 135 of this chapter approved training program.

Notwithstanding the privileges in § 61.167(a)(2) of this chapter, a person who holds an airline transport pilot certificate with powered-lift ratings must hold a flight instructor certificate with the appropriate powered-lift ratings to instruct pilots in accordance with a training curriculum approved to meet the requirements of § 194.243(a)(1).

§ 194.207 Alternate requirement for practical tests and training in a powered-lift.

(a) *Required equipment for the practical test.* Notwithstanding the equipment requirement in § 61.45(b)(1)(ii) of this chapter and the limitation specified in § 61.45(b)(2) of this chapter, an applicant for a certificate or rating may use a powered-lift that is precluded from performing all of the tasks required for the practical test without receiving a limitation on the applicant's certificate or rating, as appropriate.

(b) *Waiver authority for a practical test conducted in a powered-lift.* An Examiner who conducts a practical test in a powered-lift may waive any task for which the FAA has provided waiver authority.

(c) *Flight training on waived tasks.* Notwithstanding the requirements in §§ 61.107(a) and 61.127(a) of this chapter for training to include the areas of operation listed in § 61.107(b)(5) or § 61.127(b)(5) of this chapter, as applicable, an applicant seeking a private pilot certificate or commercial pilot certificate with a powered-lift category rating concurrently with a powered-lift type rating is not required to receive and log flight training on a task specified in an area of operation if the powered-lift is not capable of performing the task, provided the FAA has issued waiver authority for that task in accordance with paragraph (b) of this section.

§ 194.209 Additional qualification requirements for certain pilots serving as second-in-command.

(a) A person who obtains at least a private pilot certificate with a powered-lift category rating by satisfactorily completing the practical test in a powered-lift that is precluded from performing each task required by § 61.43(a)(1) of this chapter may not

serve as second-in-command of a powered-lift that is capable of performing the tasks that were waived on the person's practical test until the person has—

(1) Received and logged ground and flight training from an authorized instructor on the specific tasks that were waived on the person's practical test; and

(2) Received a logbook or training record endorsement from an authorized instructor certifying the person has satisfactorily demonstrated proficiency of those tasks.

(b) The training and endorsement required by paragraph (a) of this section are not required if, prior to serving as second-in-command, a person meets one of the following requirements—

(1) Successfully completes the practical test for a powered-lift type rating, and the practical test includes each task required by § 61.43(a)(1) of this chapter; or

(2) Has received ground and flight training under an approved training program and has satisfactorily completed a competency check under § 135.293 or § 91.1065 of this chapter in a powered-lift, and the approved training and checking include each task that was previously waived in accordance with § 194.207(b).

§ 194.211 Alternate eligibility requirements for a person seeking a powered-lift type rating.

(a) *General applicability*. The requirements specified in paragraphs (b) and (c) of this section apply only to persons seeking a type rating in a powered-lift that is capable of performing instrument maneuvers and procedures.

(b) *Obtaining an initial powered-lift type rating without concurrently obtaining the instrument-powered-lift rating.* (1) Notwithstanding the requirement to hold or concurrently obtain an appropriate instrument rating in § 61.63(d)(1) of this chapter, a person who applies for an initial powered-lift type rating to be completed concurrently with a powered-lift category rating may apply for the type rating without holding or concurrently obtaining a powered-lift instrument rating, but the type rating will be limited to "visual flight rules (VFR) only."

(2) Notwithstanding the requirement in § 61.63(d)(4) of this chapter, a person who applies for a powered-lift type rating pursuant to paragraph (b)(1) of this section is not required to perform the type rating practical test in actual or simulated instrument conditions.

(3) Except as specified in paragraph (b)(6) of this section, a person who obtains a powered-lift type rating with a "VFR only" limitation pursuant to paragraph (b)(1) of this section must remove the limitation in accordance with paragraph (b)(4) of this section within 2 calendar months from the month in which the person passes the type rating practical test.

(4) The "VFR only" limitation may be removed after the person—

(i) Passes an instrument rating practical test in a powered-lift in actual or simulated instrument conditions; and

(ii) Passes a practical test in the powered-lift type for which the "VFR only" limitation applies on the appropriate areas of operation listed in § 61.157(e)(3) of this chapter that consist of performing instrument maneuvers and procedures in actual or simulated instrument conditions.

(5) Except as specified in paragraph (b)(6) of this section, if a person who obtains a powered-lift type rating with a "VFR only" limitation pursuant to paragraph (b)(1) of this section does not remove the limitation within 2 calendar months from the month in which the person completed the type rating practical test, the powered-lift type rating for which the "VFR only" limitation applies will become invalid for use until the person removes the limitation in accordance with paragraph (b)(4) of this section.

(6) A person holding a private pilot certificate is not required to remove the "VFR only" limitation if the limitation applies to a powered-lift type that is not a large aircraft or turbojet-powered.

(c) *Obtaining an additional powered-lift type rating with a "VFR Only" limitation.* (1) Notwithstanding the requirement to hold or concurrently obtain an appropriate instrument rating in § 61.63(d)(1) of this chapter, a person holding a private pilot certificate may apply for a powered-lift type rating for a powered-lift that is not a large aircraft or turbojet-powered without holding or concurrently obtaining a powered-lift instrument rating, but the type rating will be limited to "VFR only."

(2) Notwithstanding the requirement in § 61.63(d)(4) of this chapter, a person who applies for a powered-lift type rating pursuant to paragraph (c)(1) of this section is not required to perform the type rating practical test in actual or simulated instrument conditions.

(3) A person who obtains a powered-lift type rating with a "VFR only" limitation pursuant to paragraph (c)(1) of this section may remove the "VFR only" limitation for that powered-lift type as specified in paragraph (b)(4) of this section.

(d) *Concurrent practical tests for removal of "VFR only" limitation.* If a task required for the practical test specified in paragraph (b)(4)(i) of this section overlaps with a task required for the practical test specified in paragraph (b)(4)(ii) of this section, a person may perform the task a single time provided the task is performed to the highest standard required for the task.

§ 194.213 Alternate endorsement requirements for certain persons seeking a powered-lift rating.

(a) Notwithstanding the requirements in part 61 of this chapter for an authorized instructor to provide endorsements for certificates and ratings, including endorsements for solo flight, the following persons may provide the required logbook or training record endorsements under part 61 and this part for a commercial pilot certificate with a powered-lift category rating, an instrument-powered-lift rating, a powered-lift type rating, or a flight instructor certificate with powered-lift ratings—

(1) An instructor pilot, provided the applicant is either—

(i) A test pilot for the manufacturer of an experimental powered-lift; or

(ii) A person authorized by the Administrator to serve as an initial check pilot, chief instructor, assistant chief instructor, or training center evaluator for the purpose of initiating training in a powered-lift under an approved training program under part 135, 141, or 142 of this chapter, as appropriate; or

(2) A management official within the manufacturer's organization, provided the applicant is an instructor pilot for the manufacturer of an experimental powered-lift.

(b) The endorsements for training time under this section must include a description of the training given, length of training lesson, and the endorsement provider's signature and identifying information, including certificate number and expiration date, if applicable.

§ 194.215 Applicability of alternate aeronautical experience and logging requirements for commercial pilot certification and a powered-lift instrument rating.

(a) The alternate requirements set forth in §§ 194.217 through 194.231 apply only to persons who hold at least a commercial pilot certificate with the following ratings:

(1) An airplane category rating with a single-engine or multi-engine class rating and an instrument-airplane rating; or

(2) A rotorcraft category rating with a helicopter class rating and an instrument-helicopter rating.

(b) If no alternate aeronautical experience or logging requirement is provided under this part, the person must meet the applicable requirements under part 61 of this chapter, as appropriate.

§ 194.217 Test pilots: Alternate aeronautical experience and logging requirements for a commercial pilot certificate with a powered-lift category rating.

(a) *General applicability*. An applicant for a commercial pilot certificate with a powered-lift category rating who is a test pilot for the manufacturer of an experimental

powered-lift may satisfy the alternate aeronautical experience and logging requirements set forth in paragraphs (b) and (c) of this section, provided—

(1) The flights are conducted in an experimental powered-lift at the manufacturer; and

(2) The applicant is authorized by the Administrator to act as pilot in command of the experimental powered-lift.

(b) *Alternate aeronautical experience requirements.* Notwithstanding the eligibility requirement specified in § 61.123(f) of this chapter, a test pilot may meet the requirements in paragraphs (b)(1) through (4) of this section in lieu of the aeronautical experience requirements of § 61.129(e)(3) and (4) of this chapter.

(1) A test pilot may receive 20 hours of flight training on the areas of operation listed in §61.127(b)(5) of this chapter from an instructor pilot for the manufacturer of an experimental powered-lift in lieu of an authorized instructor, provided—

(i) The training is conducted in accordance with the manufacturer's proposed training curriculum in the experimental powered-lift; and

(ii) The test pilot receives a logbook or training record endorsement from the instructor pilot certifying that the test pilot satisfactorily completed the training curriculum specified in paragraph (b)(1)(i) of this section.

(2) A test pilot may accomplish the practical test preparation requirements in § 61.129(e)(3)(iv) of this chapter with a pilot who serves as an instructor pilot for the manufacturer of the experimental powered-lift.

(3) A test pilot may satisfy the aeronautical experience requirement in §61.129(e)(4) of this chapter by logging at least 10 hours of solo flight time under an endorsement from an instructor pilot or performing the duties of pilot-in-command in an experimental powered-lift with one of the following individuals onboard (which may be credited towards the flight time requirement in § 61.129(e)(2) of this chapter)—

(i) Another test pilot for the manufacturer of the powered-lift who is authorized by the Administrator to act as pilot-in-command of the experimental powered-lift; or

(ii) An instructor pilot for the manufacturer of the powered-lift who is authorized by the Administrator to act as pilot-in-command of the experimental powered-lift.

(4) A test pilot may satisfy the alternate requirements in § 194.233 in lieu of the cross-country aeronautical experience requirements specified in § 61.129(e)(3)(ii) and (iii) and (e)(4)(i) of this chapter.

(c) *Alternate logging requirement.* Notwithstanding the logging requirements in § 61.51(e)(1) of this chapter, an applicant for a commercial pilot certificate with a powered-lift category rating may log pilot-in-command flight time for the purpose of satisfying the aeronautical experience requirements in §61.129(e)(2)(i) and (ii) of this chapter for flights when the pilot is the sole manipulator of the controls of an experimental powered-lift for which the pilot is not rated, provided—

(1) The test pilot is acting as pilot-in-command of the experimental powered-lift in accordance with a letter of authorization issued by the Administrator; and

(2) The flight is conducted for the purpose of research and development or showing compliance with the regulations in this chapter in accordance with the experimental certificate issued to the powered-lift pursuant to § 21.191 of this chapter.

§ 194.219 Instructor pilots: Alternate aeronautical experience and logging requirements for a commercial pilot certificate with a powered-lift category rating.

(a) *General applicability*. An applicant for a commercial pilot certificate with a powered-lift category rating who is an instructor pilot for the manufacturer of an experimental powered-lift may satisfy the alternate aeronautical experience and logging requirements set forth in paragraphs (b) and (c) of this section, provided—

(1) The flights are conducted in an experimental powered-lift at the manufacturer; and

(2) The applicant is authorized by the Administrator to act as pilot-in-command of the experimental powered-lift.

(b) *Alternate aeronautical experience requirements.* Notwithstanding the eligibility requirement specified in § 61.123(f) of this chapter, an instructor pilot may meet the requirements in paragraphs (b)(1) through (4) of this section in lieu of the aeronautical experience requirements of § 61.129(e)(3) and (4) of this chapter.

(1) An instructor pilot may meet the requirements of paragraphs (b)(1)(i) and (ii) of this section in lieu of the 20 hours of training with an authorized instructor required by § 61.129(e)(3) of this chapter.

(i) The instructor pilot provided the manufacturer's proposed training curriculum to a test pilot in the experimental powered-lift, which includes 20 hours of training on the areas of operation listed in § 61.127(b)(5) of this chapter; and

(ii) The instructor pilot receives a logbook or training record endorsement from a management official within the manufacturer's organization certifying that the instructor pilot provided the training specified in paragraph (b)(1)(i) of this section.

(2) An instructor pilot may accomplish the practical test preparation requirements in § 61.129(e)(3)(iv) of this chapter with a pilot who serves as an instructor pilot for the manufacturer of the experimental powered-lift.

(3) An instructor pilot may satisfy the aeronautical experience requirement in §61.129(e)(4) of this chapter by logging at least 10 hours of solo flight time under an endorsement from another instructor pilot or performing the duties of pilot-in-command in an experimental powered-lift with one of the following individuals onboard (which may be credited towards the flight time requirement in § 61.129(e)(2) of this chapter)—

(i) A test pilot for the manufacturer of the powered-lift who is authorized by the Administrator to act as pilot-in-command of the experimental powered-lift; or

(ii) Another instructor pilot for the manufacturer of the powered-lift who is authorized by the Administrator to act as pilot-in-command of the experimental powered-lift.

(4) An instructor pilot may satisfy the alternate requirements in § 194.233 in lieu of the cross-country aeronautical experience requirements specified in § 61.129(e)(3)(ii) and (iii) and (e)(4)(i) of this chapter.

(c) *Alternate logging requirement.* Notwithstanding the logging requirements in §61.51(e)(3) of this chapter, an applicant for a commercial pilot certificate with a powered-lift category rating may log pilot-in-command flight time for the purpose of satisfying the aeronautical experience requirements in §61.129(e)(2)(i) and (ii) of this chapter for flights when the pilot is serving as an instructor pilot for the manufacturer of an experimental powered-lift for which the pilot is not rated, provided—

(1) The pilot is acting as pilot-in-command of the experimental powered-lift in accordance with a letter of authorization issued by the Administrator; and

(2) The flight is conducted for the purpose of crew training in accordance with the experimental certificate issued to the powered-lift pursuant to § 21.191 of this chapter.

§ 194.221 Initial cadre of instructors: Alternate aeronautical experience and logging requirements for a commercial pilot certificate with a powered-lift category rating.

(a) *General applicability*. An applicant for a commercial pilot certificate with a powered-lift category rating may satisfy the alternate aeronautical experience and logging requirements set forth in paragraphs (b) and (c) of this section, provided—

(1) The applicant is authorized by the Administrator to serve as an initial check pilot, chief instructor, assistant chief instructor, or training center evaluator for the purpose of initiating training in a powered-lift under an approved training program under part 135, 141, or 142 of this chapter, as appropriate; and

(2) The flights are conducted in type-certificated powered-lift at the manufacturer.

(b) *Alternate aeronautical experience requirements.* Notwithstanding the eligibility requirement specified in § 61.123(f) of this chapter, an applicant may meet the requirements in paragraphs (b)(1) through (4) of this section in lieu of the aeronautical experience requirements of § 61.129(e)(3) and (4) of this chapter.

(1) An applicant may receive 20 hours of flight training on the areas of operation listed in §61.127(b)(5) of this chapter from an instructor pilot for the manufacturer of the powered-lift in lieu of an authorized instructor, provided—

(i) The training is conducted in accordance with the manufacturer's training curriculum in the powered-lift; and

(ii) The applicant receives a logbook or training record endorsement from the instructor pilot certifying that the test pilot satisfactorily completed the training curriculum specified in paragraph (b)(1)(i) of this section.

(2) An applicant may accomplish the practical test preparation requirements in § 61.129(e)(3)(iv) of this chapter with a pilot who serves as an instructor pilot for the manufacturer of the powered-lift.

(3) An applicant may satisfy the aeronautical experience requirement in §61.129(e)(4) of this chapter by logging at least 10 hours of solo flight time in a powered-lift under an endorsement from an instructor pilot or performing the duties of pilot-in-command in a powered-lift with a person onboard who serves as an instructor pilot for the manufacturer of the powered-lift (which may be credited towards the flight time requirement in § 61.129(e)(2) of this chapter).

(4) An applicant may satisfy the alternate requirements in § 194.233 in lieu of the cross-country aeronautical experience requirements specified in § 61.129(e)(3)(ii) and (iii) and (e)(4)(i) of this chapter.

(c) *Alternate logging requirements.* Notwithstanding the logging requirements in § 61.51(e)(1) of this chapter, an applicant for a commercial pilot certificate with a

powered-lift category rating may log up to 40 hours of pilot-in-command flight time for the purpose of satisfying the aeronautical experience requirements in § 61.129(e)(2)(i) and (ii) of this chapter for flights when the pilot is the sole manipulator of the controls of a powered-lift for which the pilot is not rated, provided—

(1) The applicant is manipulating the controls of the powered-lift with a person onboard who serves as an instructor pilot for the manufacturer;

(2) The applicant is performing the duties of pilot-in-command; and

(3) The flight is conducted in accordance with the manufacturer's training curriculum for the powered-lift.

§ 194.223 Pilots receiving training under an approved training program: Alternate requirements for a commercial pilot certificate with a powered-lift category rating.

(a) *General applicability*. An applicant for a commercial pilot certificate with a powered-lift category rating may satisfy the alternate requirements set forth in paragraphs (b) through (d) of this section, provided the applicant is receiving training under an approved training program under part 135, 141, or 142 of this chapter for the purpose of obtaining a powered-lift category.

(b) *Alternate aeronautical experience requirements.* An applicant may satisfy the alternate requirements in § 194.233 in lieu of the cross-country aeronautical experience requirements specified in § 61.129(e)(3)(ii) and (iii) and (e)(4)(i) of this chapter.

(c) *Alternate logging requirement.* Notwithstanding the logging requirements in §61.51(e)(1) of this chapter, an applicant for a commercial pilot certificate with a powered-lift category rating may log up to 40 hours of pilot-in-command time towards the aeronautical experience requirement in § 61.129(e)(2)(i) of this chapter for flights when the applicant is the sole manipulator of the controls of a powered-lift for which the pilot is not rated, provided—

(1) The applicant is manipulating the controls of the powered-lift with an authorized instructor onboard;

(2) The applicant is performing the duties of pilot-in-command; and

(3) The flight is conducted in accordance with an approved training program under part 135, 141, or 142 of this chapter.

(d) *Use of full flight simulators.* In addition to the permitted credit for use of a full flight simulator in § 61.129(i) of this chapter, an applicant for a commercial pilot certificate with a powered-lift category rating may credit a maximum of 15 hours toward the 50-hour pilot-in-command flight time requirement in § 61.129(e)(2)(i) of this chapter, provided—

(1) The aeronautical experience was obtained performing the duties of pilot-in-command in a Level C or higher full flight simulator that represents the powered-lift category; and

(2) The full flight simulator sessions are conducted in accordance with an approved training program under part 135, 141, or 142 of this chapter.

§ 194.225 Test pilots: Alternate aeronautical experience and logging requirements for an instrument-powered-lift rating.

(a) *General applicability*. An applicant for an instrument-powered-lift rating who is test pilot for the manufacturer of an experimental powered-lift may satisfy the alternate aeronautical experience and logging requirements set forth in paragraphs (b) and (c) of this section, provided—

(1) The flights are conducted in an experimental powered-lift at the manufacturer; and

(2) The applicant is authorized by the Administrator to act as pilot-in-command of the experimental powered-lift.

(b) *Alternate aeronautical experience requirements.* A test pilot may meet the aeronautical experience requirements of paragraphs (b)(1) through (4) of this section in lieu of the aeronautical experience requirements of § 61.65(f)(2) of this chapter.

(1) Notwithstanding the eligibility requirement in § 61.65(a)(5) of this chapter, a test pilot may receive 15 hours of instrument training on the areas of operation listed in § 61.65(c) of this chapter from an instructor pilot for the manufacturer of an experimental powered-lift in lieu of an authorized instructor, provided—

(i) The training is conducted in accordance with the manufacturer's proposed training curriculum in the experimental powered-lift; and

(ii) The test pilot receives a logbook or training record endorsement from the instructor pilot certifying that the applicant satisfactorily completed the training curriculum specified in paragraph (b)(1)(i) of this section.

(2) A test pilot may accomplish the practical test preparation requirements in § 61.65(f)(2)(i) of this chapter with an instructor pilot for the manufacturer of the experimental powered-lift.

(3) A test pilot may accomplish the cross-country flight specified in §61.65(f)(2)(ii) of this chapter for an instrument-powered-lift rating without an authorized instructor, provided the test pilot—

(i) Completes the cross-country flight specified in §61.65(f)(2)(ii) of this chapter with a pilot who serves as an instructor pilot for the manufacturer of the experimental powered-lift; and

(ii) Obtains a logbook or training record endorsement from the instructor pilot certifying that the person completed the cross-country flight.

(4) A test pilot may satisfy the alternate requirements in § 194.235 in lieu of the cross-country aeronautical experience requirements specified in § 61.65(f)(2)(ii) of this chapter.

(c) *Alternate logging requirement.* Notwithstanding the logging requirements in § 61.51(e)(1) of this chapter, a test pilot may log pilot-in-command flight time for the purpose of satisfying the 10-hour cross-country requirement in § 61.65(f)(1) of this

chapter for flights when the pilot is the sole manipulator of the controls of an experimental powered-lift for which the pilot is not rated, provided—

(1) The test pilot is acting as pilot-in-command of the experimental powered-lift in accordance with a letter of authorization issued by the Administrator; and

(2) The flight is conducted for the purpose of research and development or showing compliance with the regulations in this chapter in accordance with the experimental certificate issued to the powered-lift pursuant to § 21.191 of this chapter.

§ 194.227 Instructor pilots: Alternate aeronautical experience and logging requirements for an instrument-powered-lift rating.

(a) *General applicability*. An applicant for an instrument-powered-lift rating who is an instructor pilot for the manufacturer of an experimental powered-lift may satisfy the alternate aeronautical experience and logging requirements set forth in paragraphs (b) and (c) of this section, provided—

(1) The flights are conducted in an experimental powered-lift at the manufacturer; and

(2) The applicant is authorized by the Administrator to act as pilot-in-command of the experimental powered-lift.

(b) *Alternate aeronautical experience requirements.* An instructor pilot may meet the aeronautical experience requirements of paragraphs (b)(1) through (4) of this section in lieu of the aeronautical experience requirements of § 61.65(f)(2) of this chapter.

(1) Notwithstanding the eligibility requirement in § 61.65(a)(5) of this chapter, an instructor pilot may meet the requirements of paragraphs (b)(1)(i) and (ii) of this section in lieu of the 15 hours of training with an authorized instructor required by § 61.65(f)(2) of this chapter.

(i) The instructor pilot provided the manufacturer's proposed training curriculum in the experimental powered-lift, which includes 15 hours of training on the areas of operation listed in § 61.65(c) of this chapter; and

(ii) The instructor pilot receives a logbook or training record endorsement from a management official within the manufacturer's organization certifying that the instructor pilot provided the training specified in paragraph (b)(1)(i) of this section.

(2) An instructor pilot may accomplish the practical test preparation requirements in § 61.65(f)(2)(i) of this chapter with another pilot who serves as an instructor pilot for the manufacturer of the experimental powered-lift.

(3) An instructor pilot may accomplish the cross-country flight specified in §61.65(f)(2)(ii) of this chapter for an instrument-powered-lift rating without an authorized instructor, provided the instructor pilot—

(i) Completes the cross-country flight specified in §61.65(f)(2)(ii) of this chapter with another pilot who serves as an instructor pilot for the manufacturer of the experimental powered-lift; and

(ii) Obtains a logbook or training record endorsement from the instructor pilot certifying that the person completed the cross-country flight.

(4) An instructor pilot may satisfy the alternate requirements in § 194.235 in lieu of the cross-country aeronautical experience requirements specified in § 61.65(f)(2)(ii) of this chapter.

(c) *Alternate logging requirement.* Notwithstanding the logging requirements in § 61.51(e)(3) of this chapter, an instructor pilot may log pilot-in-command flight time for the purpose of satisfying the 10-hour cross-country requirement in § 61.65(f)(1) of this chapter for flights when the pilot is serving as an instructor pilot for the manufacturer of an experimental powered-lift for which the pilot is not rated, provided the pilot—

(1) Is acting as pilot-in-command of the experimental powered-lift in accordance with a letter of authorization issued by the Administrator; and

(2) The flight is conducted for the purpose of crew training in accordance with the experimental certificate issued to the powered-lift pursuant to § 21.191 of this chapter.

§ 194.229 Initial cadre of instructors: Alternate aeronautical experience and logging requirements for an instrument-powered-lift rating.

(a) *General applicability*. An applicant for an instrument-powered-lift rating may satisfy the alternate aeronautical experience and logging requirements set forth in paragraphs (b) and (c) of this section, provided—

(1) The applicant is authorized by the Administrator to serve as an initial check pilot, chief instructor, assistant chief instructor, or training center evaluator for the purpose of initiating training in a powered-lift under an approved training program under part 135, 141, or 142 of this chapter, as appropriate; and

(2) The flights are conducted in type-certificated powered-lift at the manufacturer.

(b) *Alternate aeronautical experience requirements.* Notwithstanding the instrument rating requirements of § 61.65 of this chapter, an applicant may meet the requirements in paragraphs (b)(1) through (4) of this section in lieu of the aeronautical experience requirements of § 61.65(f)(2) of this chapter.

(1) Notwithstanding the eligibility requirement in § 61.65(a)(5) of this chapter, an applicant may receive 15 hours of instrument training on the areas of operation listed in § 61.65(c) of this chapter from an instructor pilot for the manufacturer of a powered-lift in lieu of an authorized instructor, provided—

(i) The training is conducted in accordance with the manufacturer's training curriculum in the powered-lift; and

(ii) The applicant receives a logbook or training record endorsement from the instructor pilot certifying that the applicant satisfactorily completed the training curriculum specified in paragraph (b)(1)(i) of this section.

(2) An applicant may accomplish the practical test preparation requirements in § 61.65(f)(2)(i) of this chapter with a pilot who serves as an instructor pilot for the manufacturer of the powered-lift.

(3) An applicant may accomplish the cross-country flight specified in §61.65(f)(2)(ii) of this chapter for an instrument-powered-lift rating without an authorized instructor, provided the applicant—

(i) Completes the cross-country flight specified in §61.65(f)(2)(ii) of this chapter with a pilot who serves as an instructor pilot for the manufacturer of the powered-lift; and

(ii) Obtains a logbook or training record endorsement from the instructor pilot certifying that the person completed the cross-country flight.

(4) An applicant may satisfy the alternate requirements in § 194.235 in lieu of the cross-country aeronautical experience requirements specified in § 61.65(f)(2)(ii) of this chapter.

(c) *Alternate logging requirement.* Notwithstanding the logging requirements in § 61.51(e)(1) of this chapter, an applicant for an instrument-powered-lift rating may log pilot-in-command flight time for the purpose of satisfying the 10-hour cross-country requirement in § 61.65(f)(1) of this chapter for flights when the applicant is the sole manipulator of the controls of a powered-lift for which the pilot is not rated, provided—

(1) The applicant is manipulating the controls of the powered-lift with a person onboard who serves as an instructor pilot for the manufacturer;

(2) The applicant is performing the duties of pilot-in-command; and

(3) The flight is conducted in accordance with the manufacturer's training curriculum for the powered-lift.

§ 194.231 Pilots receiving training under an approved training program: Alternate requirements for an instrument-powered-lift rating.

(a) *General applicability*. An applicant for an instrument-powered-lift rating may satisfy the alternate requirements set forth in paragraphs (b) and (c) of this section, provided the applicant is receiving training under an approved training program under part 135, 141, or 142 of this chapter for the purpose of obtaining an instrument-powered-lift rating.

(b) *Alternate aeronautical experience requirements.* An applicant may satisfy the alternate requirements in § 194.235 in lieu of the cross-country aeronautical experience requirements specified in § 61.65(f)(2)(ii) of this chapter.

(c) *Use of full flight simulators.* In addition to the permitted credit for use of a full flight simulator in § 61.65(h) of this chapter, an applicant for an instrument-powered-lift rating may credit a maximum of 4 hours toward the aeronautical experience requirement in § 61.65(f)(1) of this chapter that requires 10 hours of cross-country time in a powered-lift, provided—

(1) The aeronautical experience was obtained performing the duties of pilot-in-command during a simulated cross-country flight in a Level C or higher full flight simulator that represents the powered-lift category;

(2) The cross-country flight includes the performance of instrument procedures under simulated instrument conditions; and

(3) The sessions are conducted in accordance with an approved training program under part 135, 141, or 142 of this chapter.

§ 194.233 Alternate means to satisfy the cross-country aeronautical experience requirements for a commercial pilot certificate with a powered-lift category rating.

Notwithstanding the eligibility requirement in § 61.123(f) of this chapter, an applicant who does not meet the cross-country aeronautical experience requirements specified in § 61.129(e) of this chapter will be considered eligible for a commercial pilot certificate with a powered-lift category rating as specified in paragraphs (a) and (b) of this section.

(a) An applicant who does not meet the cross-country aeronautical experience requirements specified in § 61.129(e)(3)(ii) and (iii) of this chapter will be considered eligible for a commercial pilot certificate with a powered-lift category rating, provided the applicant has logged at least three cross-country flights consisting of—

(1) One 2-hour cross-country flight in a powered-lift in daytime conditions that consists of a total straight-line distance of more than 50 nautical miles from the original point of departure;

(2) One 2-hour cross-country flight in a powered-lift in nighttime conditions that consists of a total straight-line distance of more than 50 nautical miles from the original point of departure; and

(3) An additional cross-country flight with landings at a minimum of three points, with one segment consisting of a straight-line distance of at least 50 nautical miles from the original point of departure. Except for the original point of departure, this additional cross-country flight must include landings at different points than the cross-country flights specified in paragraphs (a)(1) and (2) of this section.

(b) An applicant who does not have the cross-country aeronautical experience specified in § 61.129(e)(4)(i) of this chapter will be considered eligible for a commercial pilot certificate with a powered-lift category, provided the applicant has logged at least two cross-country flights with landings at a minimum of three points, with one segment consisting of a straight-line distance of at least 50 nautical miles from the original point of departure. Except for the original point of departure, the second cross-country flight must include landings at different points than the first cross-country flight.

§ 194.235 Alternate means to satisfy the cross-country aeronautical experience requirements for an instrument-powered-lift rating.

(a) An applicant who does not meet the cross-country aeronautical experience requirements specified in § 61.65(f)(2)(ii) of this chapter will be considered eligible for an instrument-powered-lift rating, provided the applicant has logged instrument time that includes instrument flight training on cross-country flight procedures, including two cross-country flights in a powered-lift, provided each cross-country flight—

(1) Is conducted with either an authorized instructor or an instructor pilot; and

(2) Involves—

(i) A flight of 100 nautical miles along airways or by directed routing from an air traffic control facility;

(ii) An instrument approach at each airport; and

(iii) Three different kinds of approaches with the use of navigation systems.

(b) Notwithstanding the requirements in § 61.65(f)(2)(ii) of this chapter for the cross-country flight in a powered-lift, an applicant for an instrument-powered-lift rating is not required to file a flight plan and perform the cross-country flight under instrument flight rules, provided—

(1) The powered-lift is not certificated for instrument flight; and

(2) The applicant holds one of the following—

(i) An instrument-airplane rating;

(ii) An instrument-helicopter rating; or

(iii) An airline transport pilot certificate.

§ 194.237 Alternate means to satisfy the cross-country aeronautical experience requirements for a private pilot certificate with a powered-lift category rating.

Notwithstanding the eligibility requirement in § 61.103(g) of this chapter, an applicant who does not meet the cross-country aeronautical experience requirements specified in § 61.109(e) of this chapter will be considered eligible for a private pilot certificate with a powered-lift category rating as specified in paragraphs (a) and (b) of this section.

(a) *Cross-country aeronautical experience at night*. An applicant who does not meet the cross-country aeronautical experience specified in § 61.109(e)(2)(i) of this chapter will be considered eligible for a private pilot certificate with a powered-lift category rating, provided the applicant has received 3 hours of night flight training that includes two cross-country flights that are each over 50 nautical miles total distance.

(b) *Solo cross-country aeronautical experience.* An applicant who does not meet the solo cross-country aeronautical experience specified in § 61.109(e)(5)(ii) of this

chapter will be considered eligible for a private pilot certificate with a powered-lift category rating, provided the applicant has completed—

(1) One solo cross-country flight of 100 nautical miles total distance, with landings at three points, and one segment of the flight being a straight-line distance of more than 25 nautical miles between the takeoff and landing locations; and

(2) An additional solo cross-country flight in a powered-lift with landings at a minimum of three points, with one segment consisting of a straight-line distance of at least 50 nautical miles from the original point of departure. Except for the original point of departure, the additional cross-country flight must include landings at different points than the first cross-country flight.

§ 194.239 Alternate means to satisfy minimum curriculum content in certain appendices to part 141 of this chapter.

(a) *Flight training minimum curriculum content.* Notwithstanding the minimum curriculum requirements in § 141.55(a) of this chapter, a training course for which approval is requested is not required to consist of training on a task specified in an area of operation listed in the applicable appendix to part 141, provided—

(1) The training course for which approval is requested is for a powered-lift course;

(2) The powered-lift to be used in the course is not capable of performing the task specified in an area of operation listed in the applicable appendix to part 141; and

(3) The FAA has issued waiver authority for that task in accordance with § 194.207(b).

(b) *Cross-country minimum curriculum content.* Notwithstanding the minimum curriculum requirements in § 141.55(a) of this chapter, a training course for which approval is requested is not required to meet the minimum curriculum content specified in appendices B, C, and D to part 141, provided—

(1) The training course for which approval is requested is for a powered-lift course.

(2) The minimum curriculum content that is not met may consist of the training specified in—

(i) Appendix B, paragraph 4.(b)(5)(ii)(A);

(ii) Appendix B, paragraph 5.(e)(1);

(iii) Appendix C, paragraph 4.(c)(3)(ii);

(iv) Appendix D, paragraph 4.(b)(5)(ii) and (iii);

(v) Appendix D, paragraph 5.(e)(2); or

(vi) Appendix M, paragraphs 4.(b)(4)(ii)(A), 4.(b)(4)(iii)(A), and 5.(d)(1).

(3) For each provision of training specified in paragraph (b)(2) of this section that is not met, the training course must include an additional cross-country flight consistent with the requirements of §§ 194.233, 194.235, and 194.237.

§ 194.241 Alternate qualification requirements for chief instructors, assistant chief instructors, and check instructors.

(a) Notwithstanding the qualification requirements in §§ 141.35(a)(1), 141.36(a)(1), and 141.37(a)(2)(ii) of this chapter, for a course of training under part 141 of this chapter that uses a powered-lift, a person seeking designation as a chief instructor, an assistant chief instructor, or a check instructor for checks and tests that relate to flight training must meet the following requirements—

(1) Hold a commercial pilot certificate or an airline transport pilot certificate with the following ratings—

(i) A powered-lift category rating;

(ii) A type rating for the powered-lift used in the course; and

(iii) An instrument-powered-lift rating, if an instrument rating is required for the course.

(2) Hold a current flight instructor certificate with the following ratings—

(i) A powered-lift category rating; and

(ii) An instrument-powered-lift rating, if an instrument rating is required for the course.

(b) Notwithstanding the qualification requirements in § 141.37(a)(3)(ii) of this chapter, for a course of training under part 141 of this chapter that uses a powered-lift, a person seeking designation as a check instructor for checks and tests that relate to ground training must hold a current flight instructor certificate or ground instructor certificate with a powered-lift category rating.

§ 194.243 Pilot certification through completion of training, testing, and checking part 135 of this chapter.

(a) *Part 135 airman certification training program.* (1) Subject to the requirements in subpart H of part 135, a certificate holder under part 119 of this chapter authorized to conduct part 135 operations may obtain approval under § 135.325 of this chapter to establish and implement a training curriculum to satisfy the following:

(i) Ground training, flight training, and aeronautical experience requirements in §§ 61.65 of this chapter and 194.231 for the addition of an instrument-powered-lift rating to a commercial pilot certificate;

(ii) Ground training, flight training, and aeronautical experience requirements in § 61.63(b) of this chapter for the addition of an aircraft category rating to a commercial pilot certificate; and

(iii) Ground and flight training requirements in § 61.63(d) of this chapter to add a type rating to a commercial pilot certificate.

(2) No certificate holder may use a person, nor may any person serve, as an instructor in a training curriculum approved to meet the requirements of paragraph (a)(1) of this section unless, in addition to being qualified under §§ 135.338 and 135.340 of this chapter, the person holds a flight instructor certificate with a powered-lift category rating and instrument-powered-lift rating issued under part 61 of this chapter.

(3) A certificate holder may train a pilot in a training curriculum approved to meet the requirements of paragraph (a)(1) of this section only if the pilot is employed by the certificate holder under part 119 of this chapter and holds at least the certificates and ratings set forth by § 194.215(a).

(4) In addition to § 135.327 of this chapter, any curriculum approved under paragraphs (a)(1)(i) through (iii) of this section must include the applicable aeronautical knowledge areas, areas of operation, and flight training required by part 61 of this chapter. If an alternative requirement is provided in this part, that alternative may be used.

(b) *Part 135 airman certification and checking.* (1) A pilot who is employed by a certificate holder under part 119 of this chapter authorized to conduct operations under part 135 who completes the approved curricula in paragraphs (a)(1)(i) through (iii) of this section may apply to add a powered-lift category rating concurrently with a powered-lift instrument rating and an initial powered-lift type rating to a commercial pilot certificate if the person meets the following requirements:

(i) Meets the requirements of §§ 61.63(b) and 61.65(f) of this chapter, or if an alternative requirement is provided in this part, that alternative may be used;

(ii) Has a training record endorsement from the certificate holder certifying that the pilot satisfactorily completed the applicable ground and flight training curricula in the approved part 135 airman certification training program; and

(iii) Successfully completes the written or oral testing under § 135.293(a)(2) and (3) of this chapter, a competency check under § 135.293(b) of this chapter, and an instrument proficiency check under § 135.297 of this chapter provided the following conditions are met:

(A) The competency check includes the maneuvers and procedures required for the issuance of a commercial pilot certificate with a powered-lift category rating, for the

issuance of an instrument-powered-lift rating and for the issuance of a powered-lift type rating.

(B) The instrument proficiency check meets the requirements of § 135.297 of this chapter as applicable to a pilot in command (PIC) holding a commercial pilot certificate except that the instrument approaches to be included in the check must include all instrument approaches required for the issuance of an instrument-powered-lift rating and not only those for which the pilot is to be authorized to perform in part 135 operations.

(2) Sections 135.293(d) and 135.301(b) of this chapter are not applicable to the competency check and instrument proficiency check required by paragraph (b)(1)(iii) of this section.

(3) A pilot who meets paragraph (b)(1) of this section will be issued a commercial pilot certificate with a powered-lift category rating, an instrument-powered-lift rating, and a powered-lift type rating.

(c) *Part 135 certification testing and checking personnel.* The testing, competency checks, and instrument proficiency checks required by paragraph (b) of this section must be administered by one of the following:

(1) An FAA Aviation Safety Inspector.

(2) An Aircrew Program Designee who is authorized to perform competency checks and instrument proficiency checks for the certificate holder whose approved ground and flight training curricula has been satisfactorily completed by the pilot applicant.

(3) A Training Center Evaluator with appropriate certification authority who is also authorized to perform competency checks and instrument proficiency checks for the certificate holder whose approved ground and flight training curricula has been satisfactorily completed by the pilot applicant.

§ 194.245 Pilot qualification and program management requirements to operate powered-lift under subpart K of part 91 of this chapter.

(a) Section 91.1055(a) of this chapter applies to powered-lift operating under subpart K of part 91.

(b) Reference to class of aircraft in § 91.1055(b)(2) of this chapter is inapplicable when a powered-lift is used for the operation under subpart K of part 91.

§ 194.247 Pilot qualification requirements to operate powered-lift under part 135 of this chapter.

(a) Unless otherwise directed in this chapter, powered-lift must continue to comply with rules applicable to aircraft specified in part 135.

(b) To comply with § 135.3 of this chapter, each certificate holder that conducts commuter operations under part 135 with powered-lift in which two pilots are required by the aircraft flight manual must:

(1) Comply with subpart Y of part 121 of this chapter instead of the requirements of subparts G and H of part 135; and

(2) Include in initial ground training for pilots in command and upgrade ground training, instruction and facilitated discussion on the following:

(i) Leadership and command; and

(ii) Mentoring, including techniques for instilling and reinforcing the highest standards of technical performance, airmanship, and professionalism in newly hired pilots.

(3) Include the training required by paragraph (b)(2)(ii) of this section in recurrent ground training for pilots in command every 36 calendar months.

(4) Include in initial flight training for pilots in command and upgrade flight training, sufficient scenario-based training incorporating crew resource management and leadership and command skills, to ensure the pilot's proficiency as pilot in command.

(c) In lieu of compliance with the operating experience requirements listed in § 135.244(a)(1) through (4) of this chapter, no certificate holder may use a person, nor may any person serve, as pilot in command of a powered-lift unless that person possesses

20 hours of operating experience in each make and basic model of powered-lift to be flown.

(d) To comply with § 135.345 of this chapter, initial, transition, and upgrade ground training for powered-lift pilots must include instruction in § 135.345(b)(6)(iv) of this chapter, as applicable.

§ 194.249 References to class in parts 135, 141, and 142 of this chapter.

(a) References to class of aircraft in §§ 135.4(b)(2), 135.247(a)(1) and (2), and 135.603 of this chapter are inapplicable when a powered-lift is used for the operation under part 135.

(b) Notwithstanding the course content contained in the appendices to part 141, references to a class rating or a class of aircraft in those appendices is inapplicable when a powered-lift is used for the course of training.

(c) References to class of aircraft in §§ 142.11(d)(2)(ii), 142.49(c)(3)(iii), 142.53(b)(1), and 142.65(b)(1) of this chapter are inapplicable when a powered-lift or flight simulation device representing a powered-lift is used for the operation under part 142.

§ 194.251 Alternate means to satisfy minimum curriculum content in training courses under part 142 of this chapter.

A training course for which approval is requested is not required to consist of training on a task specified in an area of operation if the powered-lift is not capable of performing the task, provided the FAA has issued waiver authority for that task in accordance with § 194.207(b).

Subpart C - Requirements for Persons Operating Powered-lift

§ 194.301 Applicability.

Unless otherwise specified by this part, persons operating powered-lift must continue to comply with rules applicable to all aircraft in parts 91, 135, and 136 of this chapter, as applicable to the operation.

§ 194.302 Airplane provisions under part 91 of this chapter applicable to powered-lift.

No person may operate a powered-lift under part 91 unless that person complies with the regulations listed in the first column of table 1 to this section, notwithstanding their applicability to airplanes, subject to the applicability provisions in the second column, and any additional requirements specified in the third column:

Table 1 to § 194.302		
Regulation	Applicability	Additional Requirements
(a) Section 91.9 (a) and (b)	Applies to all powered-lift.	The requirement for an approved Aircraft Flight Manual is set forth in the airworthiness criteria established under § 21.17(b) of this chapter.
(b) Section 91.103(b)(1)	Applies to powered-lift for which an approved Aircraft Flight Manual containing takeoff and landing distance data is required.	
(c) Section 91.107(a)(3)(i) through (iii)	Applies to all powered-lift.	The exception under § 91.107(a)(3) for seaplane and float equipped rotorcraft operations during movement on the surface applies to persons pushing off a powered-lift from the dock or persons mooring the powered-lift at the dock.
(d) Section 91.113(d)(2) and (3)	Applies to all powered-lift.	
(e) Section 91.126(b)(1)	Applies to powered-lift operating in wing-borne flight mode.	If the powered-lift is operating in vertical-lift flight mode, see § 194.303(a).
(f) Section 91.129(e)(1) and (2), (g)(2), and (h)	Applies to large or turbine-powered powered-lift.	
(g) Section 91.129(e)(3)	Applies to powered-lift preparing to land in wing-borne flight mode.	
(h) Section 91.129(f)(1)	Applies to powered-lift operating in wing-borne flight mode.	(1) If the powered-lift is operating in vertical-lift flight mode, see § 194.303(b). (2) Section 91.129(f)(1) does not apply when the operator of a

		powered-lift is conducting a circling approach under part 97 of this chapter or when otherwise requested by air traffic control (ATC).
(i) Section 91.131(a)(2)	Applies to large powered-lift.	
(j) Section 91.151(a)	Applies to all powered-lift.	
(k) Section 91.155(b)(2)	Applies to all powered-lift.	
(l) Section 91.175(f)(4)(i)	Applies to powered-lift operators required to comply with subpart I of part 135 of this chapter.	
(m) Section 91.205(b)(11) and (14)	Applies to small powered-lift.	Position and anti-collision lights must meet § 23.2530(b) of this chapter.
(n) Section 91.205(d)(3)(i)	Applies to powered-lift certified for instrument flight rules operations.	
(o) Section 91.207	Applies to all powered-lift.	
(p) Section 91.219	Applies to all powered-lift.	
(q) Section 91.223(a) and (c)	Applies to powered-lift configured with 6 or more passenger seats, excluding any pilot seat.	Instead of terrain awareness and warning system (TAWS), powered-lift must be equipped with a helicopter terrain awareness and warning system (HTAWS) that meets the requirements in Technical Standard Order (TSO)-C194 and Section 2 of RTCA DO-309 (incorporated by reference, see § 194.109) or a FAA-approved TAWS A/HTAWS hybrid system.
(r) Section 91.313(g)	Applies to restricted category small powered-lift.	
(s) Section 91.409(e) through (h)	Applies to technically-advanced powered-lift which are powered-lift equipped with an electronically advanced system in which the pilot interfaces with a multi-computer system with increasing levels of automation in order to aviate, navigate, or communicate.	(1) Unless otherwise authorized by the Administrator, a technically advanced powered-lift must be equipped with an electronically advanced multi-computer system that includes one or more of the following installed components: (i) An electronic Primary Flight Display (PFD) that includes, at a minimum, an airspeed indicator, turn coordinator, attitude indicator, heading indicator, altimeter, and vertical speed indicator;

		(ii) An electronic Multifunction Display (MFD) that includes, at a minimum, a moving map using Global Positioning System (GPS) navigation with the aircraft position displayed; (iii) A multi-axis autopilot integrated with the navigation and heading guidance system; and (iv) Aircraft design with advanced fly-by-wire-flight control system that utilizes electronically operated controls with no direct mechanical link from the pilot to the control surfaces. (2) The display elements described in paragraphs (s)(1)(i) and (ii) of this section must be continuously visible.
(t) Section 91.411	Applies to all powered-lift.	
(u) Section 91.501	Applies to large powered-lift.	
(v) Section 91.503	Applies to all powered-lift subject to the requirements of subpart F of part 91.	Powered-lift may comply with § 91.503(a)(5) by having the appropriate engine or multiple-engines inoperative climb performance data available at the pilot station of the aircraft.
(w) Section 91.505	Applies to all powered-lift subject to the requirements of subpart F of part 91.	
(x) Section 91.507	Applies to all powered-lift subject to the requirements of subpart F of part 91.	
(y) Section 91.509	Applies to all powered-lift subject to the requirements of subpart F of part 91.	(1) Powered-lift operating over water under § 91.509(a) or (b) may use either the nearest shore or the nearest off-shore heliport structure by which to measure the nautical mile limits provided in § 91.509(a) and (b). (2) The lifeline required by § 91.509(b)(5) must be stored in accordance with § 25.1411(g) of this chapter or such airworthiness criteria as the FAA may find provide an equivalent level of

		safety in accordance with § 21.17(b) of this chapter.
(z) Section 91.511	Applies to all powered-lift subject to the requirements of subpart F of part 91.	Powered-lift operating over water under § 91.511(a) may use either the nearest shore or the nearest off-shore heliport structure by which to measure the nautical mile limits provided in § 91.511(a).
(aa) Section 91.513	Applies to all powered-lift subject to the requirements of subpart F of part 91.	
(bb) Section 91.515	Applies to all powered-lift subject to the requirements of subpart F of part 91.	
(cc) Section 91.517	Applies to all powered-lift subject to the requirements of subpart F of part 91.	
(dd) Section 91.519	Applies to all powered-lift subject to the requirements of subpart F of part 91.	
(ee) Section 91.521	Applies to large powered-lift subject to the requirements of subpart F of part 91.	The safety belt and shoulder harness required by § 91.521 must comply with § 25.785 of this chapter or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter.
(ff) Section 91.523	Applies to powered-lift having a seating capacity of more than 19 passengers subject to the requirements of subpart F of part 91.	The carry-on baggage required by § 91.523 must be stowed such that it can withstand the inertia forces specified in § 25.561(b)(3) of this chapter or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter.
(gg) Section 91.525	Applies to all powered-lift subject to the requirements of subpart F of part 91.	
(hh) Section 91.527(a)	Applies to all powered-lift subject to the requirements of subpart F of part 91.	(1) Powered-lift critical surfaces, as outlined in the aircraft flight manual for that aircraft, must also be determined to be free of frost, ice, or snow. (2) Powered-lift critical surfaces under this section are determined by the manufacturer.
(ii) Section 91.527(b)(2) and (3)	Applies to all powered-lift subject to the requirements of subpart F of part 91.	Instead of § 91.527(b)(2) and (3), to operate instrument flight rules (IFR) into known light or moderate icing conditions or VFR into known light or moderate icing

		conditions, an operator must comply with § 194.308(i).
(jj) Section 91.531(a)(1) and (2), (b), and (c)	Applies to powered-lift subject to the requirements of subpart F of part 91 and that meet the additional requirements as set forth in each paragraph of § 91.531.	
(kk) Section 91.533	Applies to all powered-lift subject to the requirements of subpart F of part 91.	
(ll) Section 91.603	Applies to large powered-lift.	The aural speed warning device required by § 91.603 must comply with § 25.1303(c)(1) of this chapter or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter.
(mm) Section 91.605(b)(1)	Applies to large powered-lift.	The Aircraft Flight Manual must contain the takeoff weight performance information.
(nn) Section 91.605(b)(2)	Applies to large powered-lift.	The Aircraft Flight Manual must contain the landing performance information.
(oo) Section 91.605(b)(3), (b)(4)(ii), and (c)	Applies to large powered-lift that execute takeoff operations using wing-borne lift and that have takeoff performance information contained in the aircraft flight manual.	
(pp) Section 91.609(c), (d), (e), (i), and (j)	Section 91.609(c) applies to powered-lift with a passenger seating configuration of 10 or more seats; paragraph (e) of § 91.609 applies to powered-lift with a passenger seating configuration of six or more seats and for which two pilots are required by type certification or operating rule; paragraphs (d), (i), and (j) of § 91.609 apply to all powered-lift required to comply with § 91.609.	(1) Operators of powered-lift having a passenger seating configuration, excluding any pilot seat, of 10 or more must comply with § 194.312 or § 194.313 in lieu of the appendices referenced in § 91.609(c)(1). (2) For compliance with § 91.609(c)(3), (e)(1), and (i), powered-lift must comply with the certification provisions listed in those paragraphs or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter. (3) Under § 91.609(d), the flight recorder must operate continuously from the earlier of when the

		powered-lift begins the takeoff roll or begins lift-off until the later of when the powered-lift completes the landing roll or lands at its destination.
(qq) Section 91.613(b)(2)	Applies to large powered-lift.	The thermal/acoustic installation materials required by § 91.613(b)(2) must meet the requirements of § 25.856 of this chapter or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter.
(rr) Section 91.1037	Applies to large powered-lift subject to the requirements of subpart K of part 91 that are certificated to conduct landing operations in wing-borne flight mode as indicated in the aircraft flight manual.	If a powered-lift operator is required to comply with this section, the operator must also comply with § 91.1025(o)(7).
(ss) Section 91.1041(b) and (d)	Applies to all powered-lift subject to the requirements of subpart K of part 91.	
(tt) Section 91.1045(a)	Applies to powered-lift subject to the requirements of subpart K of part 91 with a passenger-seat configuration of more than 30 seats or a payload capacity of more than 7,500 pounds.	Under § 91.1045(a)(3), instead of TAWS, powered-lift must be equipped with a helicopter terrain awareness and warning system (HTAWS) that meets the requirements in Technical Standard Order (TSO)-C194 and Section 2 of RTCA DO-309 or a FAA-approved TAWS A/HTAWS hybrid system.
(uu) Section 91.1045(b)	Applies to powered-lift subject to the requirements of subpart K of part 91 with a passenger-seat configuration of 30 seats or fewer, excluding each crewmember, and a payload capacity of 7,500 pounds or less.	Compliance with § 91.1045(b)(3) requires a helicopter terrain awareness and warning system that complies with § 194.307(q).

§ 194.303 Rotorcraft and helicopter provisions under part 91 of this chapter applicable to powered-lift.

No person may operate a powered-lift under part 91 unless that person complies with the regulations listed in the first column of table 1 to this section, notwithstanding

their applicability to rotorcraft or helicopters, subject to the applicability provisions in the second column and any additional requirements specified in the third column.

Table 1 to § 194.303		
Regulation	Applicability	Additional Requirements
(a) Section 91.126(b)(2)	Applies to powered-lift operating in vertical-lift flight mode.	If the powered-lift is operating in wing-borne flight mode, see § 194.302(e).
(b) Section 91.129(f)(2)	Applies to powered-lift operating in vertical-lift flight mode.	(1) If the powered-lift is operating in wing-borne flight mode, see § 194.302(h). (2) Section 91.129(f)(2) does not apply when the operator of a powered-lift is conducting a circling approach under part 97 of this chapter or when otherwise requested by ATC.

§ 194.304 IFR takeoff, approach, and landing minimums.

Section 91.1039(c) of this chapter applies to all powered-lift operated under subpart K of part 91 of this chapter regardless of powerplant type.

§ 194.305 ATC transponder and altitude reporting equipment and use.

The exceptions outlined in § 91.215(b)(3) and (5) of this chapter for aircraft not certificated with an engine-driven electrical system do not apply to powered-lift.

§ 194.306 Applicability of copter procedures under part 97 of this chapter to powered-lift.

Persons operating powered-lift may use copter procedures as defined in § 97.3 of this chapter if the aircraft is certified for instrument flight rule operations and does not contain a limitation prohibiting use of such procedures in its Aircraft Flight Manual.

§ 194.307 Airplane provisions under part 135 of this chapter applicable to powered-lift.

No person may operate a powered-lift under part 135 unless that person complies with the regulations listed in the first column of table 1 to this section, notwithstanding

their applicability to airplanes, subject to the applicability provisions in the second column and any additional requirements specified in the third column.

Table 1 to § 194.307		
Regulation	Applicability	Additional Requirements
(a) Section 135.23(r)(7)	Applies to powered-lift required to comply with § 135.385 as set forth in paragraphs (qq) and (rr) of this section.	
(b) Section 135.93(a) through (f)	Applies to all powered-lift.	
(c) Section 135.128(a)	Applies to all powered-lift.	The exception under § 135.128(a) for seaplane and float equipped rotorcraft operations during movement on the surface applies to persons pushing off a powered-lift from the dock or persons mooring the powered-lift at the dock.
(d) Section 135.145(b)	Applies to all powered-lift unless the certificate holder has previously proven a powered-lift under part 135.	
(e) Section 135.145(d)(1)	Applies to all powered-lift unless a powered-lift of the same make or similar design has been proven or validated by that certificate holder under part 135.	
(f) Section 135.150(a)(7)	Applies to large powered-lift with a passenger seating configuration, excluding any pilot seat, of more than 19.	The public address system required by § 135.150(a)(7) must comply with § 25.1423 of this chapter or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter.
(g) Section 135.150(b)(7)	Applies to large powered-lift with a passenger seating configuration, excluding any pilot seat, of more than 19.	The crewmember interphone system must comply with the requirements of § 135.150(b)(7) or such airworthiness criteria as the

		FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter.
(h) Section 135.151(a)	Applies to powered-lift with a passenger seating configuration of six or more seats and for which two pilots are required by certification or operating rules.	The cockpit voice recorder must be installed and equipped in accordance with the certification provisions listed in § 135.151(a)(1) or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter.
(i) Section 135.151(b)	Applies to powered-lift with a passenger seating configuration of 20 or more seats.	The cockpit voice recorder must be installed and equipped in accordance with the certification provisions listed in § 135.151(b)(1) or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter.
(j) Section 135.151(d)	Applies to large powered-lift or powered-lift equipped with a cockpit voice recorder.	The cockpit voice recorder required by § 135.151(d) must record the uninterrupted audio signal received by a boom or mask microphone in accordance with § 25.1457(c)(5) of this chapter or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter.
(k) Section 135.151(g)(1)	Applies to powered-lift with a passenger seating configuration of six or more seats, for which two pilots are required by certification or operating rules, and that are required to have a flight data recorder under § 135.152.	The cockpit voice recorder must be installed and equipped in accordance with the appropriate certification provisions listed in § 135.151(g)(1)(i) and (iv) or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter.

(l) Section 135.151(g)(2)	Applies to powered-lift with a passenger seating configuration of 20 or more seats and that is required to have a flight data recorder under § 135.152.	The cockpit voice recorder must be installed and equipped in accordance with the appropriate certification provisions listed in § 135.151(g)(2)(i) and (iv) or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter.
(m) Section 135.151(h)	Applies to powered-lift required to have a cockpit voice recorder and a flight data recorder with installed datalink communication equipment.	
(n) Section 135.152(c), (d), (f), and (j)	Applies to powered-lift with a passenger seating configuration, excluding crewmember seats, of 10 to 30.	(1) The flight recorder must be installed and equipped in accordance with the appropriate certification provisions listed in § 135.152 or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter. (2) Certificate holders must keep the recorded data until the powered-lift has been operating for at least 25 hours. (3) The powered-lift flight recorder must be operated continuously from the instant the powered-lift begins the takeoff roll or lift-off until the landing is completed.
(o) Section 135.152(a)	Paragraph (a) of § 135.152 applies to powered-lift with a passenger seating configuration of 10 to 19 seats.	Powered-lift operators must comply with § 194.314 or § 194.315 in lieu of the appendices referenced in § 135.152.

(p) Section 135.152(b) introductory text and (b)(3)	Paragraphs (b) introductory text and (b)(3) of § 135.152 apply to powered-lift with a passenger seating configuration of 20 to 30 seats.	
(q) Section 135.154(a) and (c)	Applies to powered-lift configured with 6 or more passenger seats, excluding any pilot seat.	Instead of TAWS, powered-lift must be equipped with a helicopter terrain awareness and warning system (HTAWS) that meets the requirements in Technical Standard Order (TSO)-C194 and Section 2 of RTCA DO-309 (incorporated by reference, see § 194.109) or a FAA-approved TAWS A/HTAWS hybrid system.
(r) Section 135.158	Applies to powered-lift equipped with a flight instrument pitot heating system.	
(s) Section 135.159(a)(1)	Applies to powered-lift with a third attitude instrument system that meets the requirements of paragraph (a)(1) of § 135.159.	
(t) Section 135.165(d)	Applies to powered-lift having a passenger seat configuration, excluding any pilot seat, of 10 seats or more, or a powered-lift in a commuter operation, as defined in part 119 of this chapter.	
(u) Section 135.165(g)(1)	Applies to powered-lift for purposes of approving a single long-range navigation system and a single long-range communication system for extended over-water operations.	
(v) Section 135.169(a)	Applies to large powered-lift.	Powered-lift must comply with appropriate certification provisions listed in § 135.169(a) or such airworthiness criteria as the FAA may find provide an

		equivalent level of safety in accordance with § 21.17(b) of this chapter.
(w) Section 135.169(b)(8)	Applies to small powered-lift with a passenger seating configuration of 10 seats or more.	Small powered-lift with a passenger seating configuration of 10 seats or more must comply with the applicable requirements under part 23 of this chapter referenced in § 135.169(b)(8) or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with §21.17(b) of this chapter.
(x) Section 135.169(d)	Applies to large powered-lift with a cargo or baggage compartment of 200 cubic feet or greater.	The cargo and baggage compartments required by § 135.169(d) must comply with the certification provisions listed in that paragraph or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter.
(y) Section 135.170(b)(1)	Applies to large powered-lift and paragraph (b)(1)(ii) of § 135.170 applies to large powered-lift with a passenger capacity of 20 or more.	Powered-lift must comply with appropriate certification provisions listed in § 135.170(b)(1) or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter.
(z) Section 135.170(b)(2)	Applies to large powered-lift	The seat cushions required by § 135.170(b)(2) must comply with § 25.853 of this chapter or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter
(aa) Section 135.170(c)(2)	Applies to large powered-lift.	The seat cushions required by § 135.170(c)(2) must comply with § 25.856 of this chapter or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter

(bb) Section 135.178	Applies to powered-lift having a passenger-seating configuration of more than 19 seats.	The additional emergency equipment must comply with appropriate certification provisions listed in § 135.178 or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter.
(cc) Section 135.180	Applies to powered-lift with a passenger seat configuration, excluding any pilot seat, of 10 to 30 seats.	The aircraft flight manual must contain the information outlined in § 135.180(b).
(dd) Section 135.203(a)	Applies to all powered-lift.	
(ee) Section 135.205(a)	Applies to all powered-lift.	
(ff) Section 135.209(a)	Applies to all powered-lift.	
(gg) Section 135.225(e)	Applies to all powered-lift.	
(hh) Section 135.227(b)(1) through (3)	Applies to all powered-lift.	(1) Powered-lift critical surfaces, as outlined in the aircraft flight manual for that aircraft, must also be determined to be free of frost, ice, or snow. (2) Powered-lift critical surfaces under this section are determined by the manufacturer. (3) For IFR and VFR flight into certain icing conditions, see § 194.308(i).
(ii) Section 135.361(a)	As applicable to each powered-lift considering size and certification basis.	
(jj) Section 135.363(a) through (e)	As applicable to each powered-lift, regardless of power plant type, considering size and certification basis.	
(kk) Section 135.363(f)	Applies to powered-lift that must comply with §§ 135.365 through 135.387 as set forth in paragraphs	

	(mm) through (ss) of this section.	
(ll) Section 135.379(a) and (d)	Applies to large powered-lift.	The Aircraft Flight Manual must contain the takeoff weight performance information.
(mm) Section 135.379(c), (e), (f), and (g)	Applies to large powered-lift certificated to conduct takeoff operations that utilize wing-borne lift as indicated in the aircraft flight manual.	The accelerate-stop distance required by § 135.179(c)(1) must comply with § 25.109 of this chapter or such airworthiness criteria as the FAA may find provide an equivalent level of safety in accordance with § 21.17(b) of this chapter.
(nn) Section 135.381	Applies to large powered-lift.	
(oo) Section 135.383(c)	Applies to large powered-lift.	
(pp) Section 135.385(a)	Applies to large powered-lift.	The Aircraft Flight Manual must contain the landing weight performance information.
(qq) Section 135.385(b), (d), (e), and (f)	Applies to large powered-lift certificated to conduct landing operations that utilize wing-borne lift and that have landing performance information contained in the aircraft flight manual.	Paragraph (f) of § 135.385 only applies to eligible on-demand operators.
(rr) Section 135.387(a) and (b)	Applies to large powered-lift certificated to conduct landing operations that utilize wing-borne lift and that have landing performance information contained in the aircraft flight manual	(1) Powered-lift operating under § 135.387(a) must be able to complete a full stop landing within 60 percent of the effective length of the runway. (2) Paragraph (b) of § 135.387 only applies to eligible on-demand operators.
(ss) Section 135.397(b)	Applies to small powered-lift having a passenger-seating configuration of more than 19 seats and that utilize wing-borne lift during takeoff and landing.	The Aircraft Flight Manual must contain the takeoff and landing weight performance information.

§ 194.308 Rotorcraft and helicopter provisions under part 135 of this chapter applicable to powered-lift.

No person may operate a powered-lift under part 135 unless that person complies with the regulations listed in the first column of table 1 to this section, notwithstanding their applicability to rotorcraft or helicopters, subject to the applicability provisions in the second column and any additional requirements specified in the third column.

Table 1 to § 194.308		
Regulation	Applicability	Additional Requirements
(a) Section 135.1(a)(9)	Applies to powered-lift conducting operations in accordance with subpart L of part 135.	
(b) Section 135.117(a)(9)	Applies to powered-lift conducting operations beyond the autorotational distance from the shoreline, as defined in § 135.168(a), or gliding distance of a shoreline.	
(c) Section 135.160	Applies to all powered-lift.	
(d) Section 135.163(g)	Applies to all powered-lift.	The two required generators may be mounted on a drivetrain that is driven by two separate powerplants as outlined in § 135.163(g) for multi-engine helicopters.
(e) Section 135.168	Applies to powered-lift operating beyond autorotational distance or gliding distance from the shoreline.	
(f) Section 135.181(b)	Applies to powered-lift conducting offshore passenger operations.	
(g) Section 135.183(d)	Applies if the powered-lift is equipped with flotation devices and carrying passengers over water.	
(h) Section 135.207	Applies if the powered-lift does not have the flight instrumentation listed in §135.159 installed and operable.	
(i) Section 135.227(d)	Applies to powered-lift that are type certificated and appropriately equipped for operations in certain icing conditions.	For critical surfaces requirements, see § 194.307(ii).
(j) Section 135.229(b)(2)(ii)	Applies to powered-lift taking off or landing in vertical-lift	If a powered-lift is not landing in vertical flight mode and not

	flight mode and equipped with landing lights oriented in a direction that enables the pilot to see a landing area marked by reflective material.	equipped with landing lights oriented in a direction that enables the pilot to see a landing area marked by reflective material, the powered-lift must land at an airport with boundary or runway marker lights.
(k) Section 135.271	Applies to powered-lift conducting operations in accordance with subpart L of part 135.	
(l) Section 135.429(d)	Applies to powered-lift that operate in remote areas or sites.	
(m) Section 135.601	Applies to powered-lift conducting operations in accordance with subpart L of part 135.	
(n) Section 135.603	Applies to powered-lift conducting operations in accordance with subpart L of part 135.	See § 194.221 for references to class in part 135.
(o) Section 135.605	Applies to powered-lift conducting operations in accordance with subpart L of part 135.	Powered-lift must be equipped with a helicopter terrain awareness and warning system (HTAWS) that meets the requirements in Technical Standard Order (TSO)-C194 and Section 2 of RTCA DO-309 (incorporated by reference, see § 194.109) or a FAA-approved TAWS A/HTAWS hybrid system.
(p) Section 135.607	Applies to powered-lift conducting operations in accordance with subpart L of part 135.	
(q) Section 135.609	Applies to powered-lift conducting operations in accordance with subpart L of part 135.	(1) For nonmountainous local flying areas, powered-lift must comply with the following weather minimums: (ii) During day operations, a ceiling of 800 feet and visibility of 2 SM; and (iii) During night operations, a ceiling of 1500 feet and visibility of 3 SM. (2) For nonmountainous, non-local flying areas, powered-lift

		must comply with the following weather minimums: (i) During day operations, a ceiling of 800 feet and visibility of 3 SM; and (ii) During night operations, a ceiling of 1500 feet and visibility of 3 SM. (3) For mountainous local flying areas, powered-lift must comply with the following weather minimums: (i) During day operations, a ceiling of 800 feet and visibility of 3 SM; and (ii) During night operations, a ceiling of 2500 feet and visibility of 3 SM. (4) For mountainous non-local flying areas, powered-lift must comply with the following weather minimums: (i) During day operations, a ceiling of 1000 feet and visibility of 3 SM; and (ii) During night operations, a ceiling of 2500 feet and visibility of 5 SM.
(r) Section 135.611	Applies to powered-lift conducting operations in accordance with subpart L of part 135.	
(s) Section 135.613	Applies to powered-lift conducting operations in accordance with subpart L of part 135.	(1) Section 135.613(a)(1) only applies to powered-lift equipped and certified to conduct PinS approaches annotated with a "Proceed VFR" segment. (2) The applicable weather minimums under § 135.613(a)(2) are: (i) For Day Operations: No less than a 1000-foot

		ceiling and 2 statute miles flight visibility; and (ii) For Night Operations: No less than a 1500-foot ceiling and 3 statute miles flight visibility. (3) Under § 135.613, the VFR weather minimums outlined in paragraphs (b)(1)(ii)(A) and (B) apply.
(t) Section 135.615	Applies to powered-lift conducting operations in accordance with subpart L of part 135.	(1) Under § 135.615, the minimums outlined in paragraphs (a)(3)(ii)(A) and (B) apply. (2) Under § 135.615(b)(1) and (2), while conducting VFR operations, the pilot in command must ensure that all terrain and obstacles along the route of flight are cleared vertically by no less than the following: (i) During the day, 500 feet above the surface or 500 feet horizontally from any obstacle; or (ii) At night, at an altitude of 1,000 feet above the highest obstacle within a horizontal distance of 5 miles from the course intended to be flown or, in designated mountainous terrain, 2,000 feet above the highest obstacle within a horizontal distance of 5 miles from the course intended to be flown.
(u) Section 135.617	Applies to powered-lift conducting operations in accordance with subpart L this part 135.	
(v) Section 135.619	Applies to powered-lift operators with 10 or more powered-lift, helicopters, or any combination thereof, assigned to the certificate holder's	

	operations specifications for air ambulance operations.	
(w) Section 135.621	Applies to powered-lift conducting operations in accordance with subpart L of part 135.	

§ 194.309 Applicability of rules for eligible on-demand operations.

No person may operate a powered-lift in an eligible on-demand operation under part 135 of this chapter without complying with the requirements specified for the second in command of a fixed-wing aircraft contained in § 135.4(a)(3) of this chapter.

§ 194.310 Applicability of national air tour safety standards under part 136 of this chapter to powered-lift.

(a) No person may operate a powered-lift under part 136 without complying with the requirements specified for airplanes contained in the following regulations in part 136:

(1) Section 136.9(b)(2) applies to powered-lift operating in wing-borne flight mode within power-off gliding distance to the shoreline.

(2) [Reserved]

(b) No person may operate a powered-lift under part 136 without complying with the requirements specified for helicopter or rotorcraft contained in the following regulations in part 136:

(1) *Suitable landing area*, as defined in § 136.1, applies to powered-lift conducting commercial air tours;

(2) Section 136.11(a)(2), (b), and (c) apply to powered-lift operating in vertical-lift flight mode while conducting commercial air tours over water beyond the auto-rotational or gliding distance from the shoreline;

(3) Section 136.13; and

(4) Appendix A to part 136 as follows:

(i) Section 3 applies to all powered-lift operators conducting air tours in Hawaii beyond the shore of any island;

(ii) Section 4; and

(iii) Section 5 applies to powered-lift with aircraft flight manuals containing height velocity information.

§ 194.311 Applicability of flight instruction; Simulated instrument flight.

The requirement to hold the appropriate category and class rating in § 91.109(c)(1)(i) of this chapter is not applicable to operations conducted to meet alternate aeronautical experience requirements set forth in §§ 194.225, 194.227, and 194.229.

§ 194.312 Powered-lift in vertical-lift flight mode, flight recorder specifications under part 91 of this chapter.

Table 1 to § 194.312

Parameters	Range	Installed system[1] minimum accuracy (to recovered data)	Sampling interval (per second)	Resolution 3 read out
Relative Time (From Recorded on Prior to Takeoff)	4 hr minimum	±0.125% per hour	1	1 sec.
Indicated Airspeed	VM in to VD (KIAS) (minimum airspeed signal attainable with installed pilot-static system)	±5% or ±10 kts., whichever is greater	1	1 kt.
Altitude	−1,000 ft. to 20,000 ft. pressure altitude	±100 to ±700 ft. (see Table 1, TSO C51-a)	1	25 to 150 ft.
Magnetic Heading	360°	±5°	1	1°
Vertical Acceleration	−3g to + 6g	±0.2g in addition to ±0.3g maximum datum	4 (or 1 per second where peaks, ref. to 1g are recorded)	0.05g.
Longitudinal Acceleration	±1.0g	±1.5% max. range excluding datum error of ±5%	2	0.03g.
Pitch Attitude	100% of usable range	±2°	1	0.8°
Roll Attitude	±60 or 100% of usable range, whichever is greater	±2°	1	0.8°

Altitude Rate	±8,000 fpm	±10% Resolution 250 fpm below 12,000 ft. indicated	1	250 fpm below 12,000.
Engine Power, Each Engine				
Main Rotor Speed	Maximum Range	±5%	1	1%[2]
Free or Power Turbine	Maximum Range	±5%	1	1%[2]
Engine Torque	Maximum Range	±5%	1	1%[2]
Flight Control Hydraulic Pressure				
Primary (Discrete)	High/Low		1	
Secondary - if applicable (Discrete)	High/Low		1	
Radio Transmitter Keying (Discrete)	On/Off		1	
Autopilot Engaged (Discrete)	Engaged or Disengaged		1	
SAS Status-Engaged (Discrete)	Engaged or Disengaged		1	
SAS Fault Status (Discrete)	Fault/OK		1	
Flight Controls				
Pilot Inputted - Primary Controls (I.E. Ascent, descent, acceleration and deceleration, heading and directional control for all axis)	Full range	±3%	2	1%[2]
Controllable Stabilator Position	Full range	±3%	2	1%[2]

[1] When data sources are aircraft instruments (except altimeters) of acceptable quality to fly the aircraft the recording system excluding these sensors (but including all other characteristics of the recording system) shall contribute no more than half of the values in this column.

[2] Percent of full range.

§ 194.313 Powered-lift in wing-borne flight mode, flight recorder specifications under part 91 of this chapter.

Table 1 to § 194.313

Parameters	Range	Installed system[1] minimum accuracy (to recovered data)	Sampling interval (per second)	Resolution read out
Relative Time (From Recorded on Prior to Takeoff)	8 hr minimum	±0.125% per hour	1	1 sec.
Indicated Airspeed	Vso to VD (KIAS)	±5% or ±10 kts., whichever is greater. Resolution 2 kts. below 175 KIAS	1	1%[3]
Altitude	−1,000 ft. to max cert. alt. of A/C	±100 to ±700 ft. (see Table 1, TSO C51-a)	1	25 to 150 ft.
Magnetic Heading	360°	±5°	1	1°
Vertical Acceleration	−3g to + 6g	±0.2g in addition to ±0.3g maximum datum	4 (or 1 per second where peaks, ref. to 1g are recorded)	0.03g.
Longitudinal Acceleration	±1.0g	±1.5% max. range excluding datum error of ±5%	2	0.01g.
Pitch Attitude	100% of usable	±2°	1	0.8°
Roll Attitude	±60° or 100% of usable range, whichever is greater	±2°	1	0.8°
Stabilizer Trim Position, or	Full Range	±3% unless higher uniquely required	1	1%[3]
Pitch Control Position				
Engine Power, Each Engine:	Full Range	±3% unless higher uniquely required	1	1%[3]
Fan or N[1] Speed or EPR or Cockpit indications Used for Aircraft Certification OR	Maximum Range	±5%	1	1%[3]
Prop. speed and Torque (Sample Once/Sec as Close together as Practicable)			1 (prop Speed) 1 (torque)	1%[3] 1%[3]
Altitude Rate[2] (need depends on altitude resolution)	±8,000 fpm	±10%. Resolution 250 fpm below 12,000 ft. indicated	1	250 fpm. below 12,000

Angle of Attack[2] (need depends on altitude resolution)	−20° to 40° or 100% of usable range	±2°	1	0.8%[3]
Radio Transmitter Keying (Discrete)	On/Off		1	
TE Flaps (Discrete or Analog)	Each discrete position (U, D, T/ O, AAP) OR		1	
LE Flaps (Discrete or Analog)	Analog 0-100% range	±3%	1	1%[3]
	Each discrete position (U, D, T/ O, AAP) OR		1	
Thrust Reverser, Each Engine (Discrete)	Analog 0-100% range	±3°	1	1%[3]
	Stowed or full reverse			
Spoiler/Speedbrake (Discrete)	Stowed or out		1	
Autopilot Engaged (Discrete)	Engaged or Disengaged		1	

[1] When data sources are aircraft instruments (except altimeters) of acceptable quality to fly the aircraft the recording system excluding these sensors (but including all other characteristics of the recording system) shall contribute no more than half of the values in this column.

[2] If data from the altitude encoding altimeter (100 ft. resolution) is used, then either one of these parameters should also be recorded. If, however, altitude is recorded at a minimum resolution of 25 feet, then these two parameters can be omitted.

[3] Percent of full range.

§ 194.314 Powered-lift in vertical-lift flight mode, flight recorder specifications under part 135 of this chapter.

Table 1 to § 194.314

Parameters	Range	Installed system[1] minimum accuracy (to recovered data)	Sampling interval (per second)	Resolution read out
Relative time (from recorded on prior to takeoff)	25 hr minimum	±0.125% per hour	1	1 sec.

Indicated airspeed	V_m in to V_D (KIAS) (minimum airspeed signal attainable with installed pilot-static system)	±5% or ±10 kts., whichever is greater	1	1 kt.
Altitude	−1,000 ft. to 20,000 ft. pressure altitude	±100 to ±700 ft. (see Table 1, TSO C51-a)	1	25 to 150 ft.
Magnetic heading	360°	±5°	1	1°.
Vertical acceleration	−3g to + 6g	±0.2g in addition to ±0.3g maximum datum	4 (or 1 per second where peaks, ref. to 1g are recorded)	0.05g.
Longitudinal acceleration	±1.0g	±1.5% max. range excluding datum error of ±5%	2	0.03g.
Pitch attitude	100% of usable range	±2°	1	0.8°.
Roll attitude	±60° or 100% of usable range, whichever is greater	±2°	1	0.8°.
Altitude rate	±8,000 fpm	±10% Resolution 250 fpm below 12,000 ft. indicated	1	250 fpm below 12,000.
Engine Power, Each Engine				
Main rotor speed	Maximum range	±5%	1	1%[2]
Free or power turbine	Maximum range	+ 5%	1	1%[2]
Engine torque	Maximum range	±5%	1	1%[2]
Flight Control - Hydraulic Pressure				
Primary (discrete)	High/low		1	
Secondary - if applicable (discrete)	High/low		1	
Radio transmitter keying (discrete)	On/off		1	
Autopilot engaged (discrete)	Engaged or disengaged		1	
SAS status - engaged (discrete)	Engaged/disengaged		1	
SAS fault status (discrete)	Fault/OK		1	
Flight Controls				

Primary Controls (I.E. Ascent, descent, acceleration and deceleration, heading and directional control for all axis)[3]	Full range	±3%	2	1%[2]
Controllable Stabilator Position[3]	Full range	±3%	2	1%[2]

[1] When data sources are aircraft instruments (except altimeters) of acceptable quality to fly the aircraft the recording system excluding these sensors (but including all other characteristics of the recording system) shall contribute no more than half of the values in this column.

[2] Percent of full range.

[3] For all aircraft manufactured on or after December 6, 2010, the sampling interval per second is 4.

§ 194.315 Powered-lift in wing-borne flight mode, flight recorder specification under part 135 of this chapter.

Table 1 to § 194.315

Parameters	Range	Installed system[1] minimum accuracy (to recovered data)	Sampling interval (per second)	Resolution read out
Relative time (from recorded on prior to takeoff)	25 hr minimum	±0.125% per hour	1	1 sec.
Indicated airspeed	V_{so} to V_D (KIAS)	±5% or ±10 kts., whichever is greater. Resolution 2 kts. below 175 KIAS	1	1%[3]
Altitude	−1,000 ft. to max cert. alt. of A/C	±100 to ±700 ft. (see Table 1, TSO C51-a)	1	25 to 150
Magnetic heading	360°	±5°	1	1°
Vertical acceleration	−3g to + 6g	±0.2g in addition to ±0.3g maximum datum	4 (or 1 per second where peaks, ref. to 1g are recorded)	0.03g.
Longitudinal acceleration	±1.0g	±1.5% max. range excluding datum error of ±5%	2	0.01g.
Pitch attitude	100% of usable	±2°	1	0.8°
Roll attitude	±60° or 100% of usable range, whichever is greater	±2°	1	0.8°
Stabilizer trim position	Full range	±3% unless higher uniquely required	1	1%[3]
Or				

Pitch control position	Full range	±3% unless higher uniquely required	1	1%[3]
Engine Power, Each Engine				
Fan or N_1 speed or EPR or cockpit indications used for aircraft certification	Maximum range	±5%	1	1%[3]
Or				
Prop. speed and torque (sample once/sec as close together as practicable)			1 (prop speed), 1 (torque)	
Altitude rate[2] (need depends on altitude resolution)	±8,000 fpm	±10%. Resolution 250 fpm below 12,000 ft. indicated	1	250 fpm Below 12,000
Angle of attack[2] (need depends on altitude resolution)	−20° to 40° or of usable range	±2°	1	0.8%[3]
Radio transmitter keying (discrete)	On/off		1	
TE flaps (discrete or analog)	Each discrete position (U, D, T/O, AAP)		1	
	Or			
	Analog 0-100% range	±3°	1	1%[3]
LE flaps (discrete or analog)	Each discrete position (U, D, T/O, AAP)		1	
	Or			
	Analog 0-100% range	±3°	1	1%[3]
Thrust reverser, each engine (Discrete)	Stowed or full reverse		1	
Spoiler/speedbrake (discrete)	Stowed or out		1	
Autopilot engaged (discrete)	Engaged or disengaged		1	

[1] When data sources are aircraft instruments (except altimeters) of acceptable quality to fly the aircraft the recording system excluding these sensors (but including all other characteristics of the recording system) shall contribute no more than half of the values in this column.

[2] If data from the altitude encoding altimeter (100 ft. resolution) is used, then either one of these parameters should also be recorded. If, however, altitude is recorded at a minimum resolution of 25 feet, then these two parameters can be omitted.

[3] Percent of full range.

Subpart D - Maintenance, Preventive Maintenance, Rebuilding, and Alteration Requirements for Powered-lift under Part 43 of this Chapter

§ 194.401 Applicability.

Unless otherwise specified by this part, powered-lift must continue to comply with rules applicable to all aircraft in part 43 of this chapter.

§ 194.402 Maintenance provisions.

The following maintenance provisions under part 43 of this chapter that pertain to rotorcraft also apply to powered-lift:

(a) Section 43.3(h) of this chapter applies to certificate holders operating powered-lift under part 135 of this chapter in a remote area; and

(b) In lieu of complying with § 43.15(b) of this chapter, each person performing an inspection required by part 91 of this chapter on a powered-lift shall inspect critical parts in accordance with the maintenance manual or Instruction for Continuous Airworthiness, or as otherwise approved by the Administrator.

(1) A "critical part" has the same meaning as provided in §§ 27.602 and 29.602 of this chapter.

(2) [Reserved]

Issued under authority provided by 49 U.S.C. 106(f), 40113, 44701-44705, 44707, 44712, 44713, 44715, 44722, and 44730 in Washington, D.C., on May 22, 2023.

David H. Boulter,

Acting Associate Administrator for Aviation Safety.

[FR Doc. 2023-11497 Filed: 6/7/2023 11:15 am; Publication Date: 6/14/2023]