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14 CFR Parts 91, 120, and 135
Helicopter Air Ambulance, Commercial Helicopter, and Part 91 Helicopter Operations; Final Rule

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 91, 120, and 135

[Docket No.: FAA–2010–0982; Amdt. Nos. 91–330; 120–2; 135–129]

RIN 2120–AJ53

Helicopter Air Ambulance, Commercial Helicopter, and Part 91 Helicopter Operations

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This final rule addresses helicopter air ambulance, commercial helicopter, and general aviation helicopter operations. To address an increase in fatal helicopter air ambulance accidents, the FAA is implementing new operational procedures and additional equipment requirements for helicopter air ambulance operations. This final rule also increases safety for commercial helicopter operations by revising requirements for equipment, pilot testing, and alternate airports. It increases weather minimums for all general aviation helicopter operations. Many of these requirements address National Transportation Safety Board safety recommendations, and are already found in FAA guidance. Today's changes are intended to provide certificate holders and pilots with additional tools and procedures that will aid in preventing accidents.

DATES: This rule is effective April 22, 2014. Affected parties, however, do not have to comply with the information collection requirements in §§ 120.105(i), 120.215(a)(9), 135.615, 135.617, 135.619, and 135.621 until the Office of Management and Budget (OMB) approves the collection and assigns a control number under the Paperwork Reduction Act of 1995. The FAA will publish in the **Federal Register** a notice of the control number assigned by OMB for these information collection requirements.

The incorporation by reference of certain publications listed in §§ 135.168 and 135.605 is approved by the Director of the Federal Register as of April 22, 2014.

ADDRESSES: For information on where to obtain copies of rulemaking documents and other information related to this final rule, see ''How to Obtain Additional Information'' in the **SUPPLEMENTARY INFORMATION** section of this document.

FOR FURTHER INFORMATION CONTACT: For technical questions about this action contact Andy Pierce, Aviation Safety Inspector, Flight Standards Service, 135 Air Carrier Operations Branch, AFS–250, Federal Aviation Administration, 800 Independence Ave. SW., Washington, DC 20591; telephone: (202) 267–8238; email *andy.pierce@faa.gov*.

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SUPPLEMENTARY INFORMATION:

Authority for This Rulemaking

The FAA's authority to issue rules on aviation safety is found in Title 49 of the United States Code (U.S.C.). This rulemaking is promulgated under the general authority described in 49 U.S.C. 106(f) and 44701(a), and the specific authority set forth in section 306 of the FAA Modernization and Reform Act of 2012 (Pub. L. 112–95), which is now codified at 49 U.S.C. 44730.

Specifically, 49 U.S.C. 44730 requires that part 135 certificate holders providing air ambulance services comply with part 135 regulations pertaining to weather minimums and flight and duty time when medical personnel are onboard the aircraft. The statute also directs the FAA to conduct rulemaking on helicopter air ambulance operations to address: (1) Flight request and dispatch procedures; (2) pilot training standards for preventing controlled flight into terrain and recovery from IIMC; and (3) safety-enhancing technology and equipment, including, HTAWS, radio altimeters, and, to the extent feasible, devices that perform the function of flight data recorders and cockpit voice recorders. Further, section 44730 requires the rulemaking to address: (1) Flight risk evaluation programs; and (2) operational control centers for helicopter air ambulance services with 10 or more helicopters. In addition, the statute directs the FAA to issue a final rule by June 1, 2012 with respect to the NPRM published in the **Federal Register** on October 12, 2010 (75 FR 62640).

List of Abbreviations and Acronyms Used in This Document

AC—Advisory Circular
ARC—Aviation Rulemaking Committee
AWOS—Automated Weather Observation System
CFIT—Controlled Flight into Terrain
CVR—Cockpit Voice Recorder
ELT—Emergency Locator Transmitter
EMS—Emergency Medical Service
FDR—Flight Data Recorder
FDMS—Flight Data Monitoring System
FOQA—Flight Operational Quality Assurance
GPS—Global Positioning System
HEMS—Helicopter Emergency Medical Services
HTAWS—Helicopter Terrain Awareness and Warning System
ICAO—International Civil Aviation Organization
IFR—Instrument Flight Rules
IMC—Instrument Meteorological Conditions
LARS—Light-weight Aircraft Recording System
MHz—Megahertz
MEL—Minimum Equipment List
MOU—Memorandum of Understanding
NM—Nautical Mile
NPRM—Notice of Proposed Rulemaking
NTSB—National Transportation Safety Board
NVG—Night Vision Goggles
NVIS—Night-Vision Imaging System
OCC—Operations Control Center
OCS—Operations Control Specialist
OpSpec—Operations Specification
PinS—Point-in-Space Approach
PV—Present Value
SAFO—Safety Alert for Operators
TAWS—Terrain Avoidance and Warning System
TSO—Technical Standard Order
VFR—Visual Flight Rules
VMC—Visual Meteorological Conditions

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I. Executive Summary

The provisions of this rule are directed primarily toward helicopter air ambulance operations and all commercial helicopter operations conducted under part 135. This rule also establishes new weather minimums for helicopters operating under part 91 in Class G airspace.

For helicopter air ambulances, this rule requires operations with medical personnel on board to be conducted under part 135 operating rules and introduces new weather minimums and visibility requirements for part 135 operations. It mandates 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 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 will be required to hold instrument ratings.

For all helicopters operated under part 135, these rules require that operators carry more survival equipment for operations over water. Alternate airports named in flight plans must have higher weather minimums than are currently required. These helicopters must be equipped with radio altimeters and pilots must be able to demonstrate that they can maneuver the aircraft during an inadvertent encounter with instrument meteorological conditions (IMC) to get out of those conditions safely.

Additionally, this rule contains a provision affecting part 91 helicopter operations. The rule assigns new weather minimums to part 91 helicopter operations in Class G airspace.

Below, Table 1 shows those affected by today's new rules and how existing rules are being changed; Table 2 shows the costs and benefits of the rule by affected population; and Table 3 shows the cost of the rule by rule provision.

TABLE 1—AFFECTED ENTITIES

Affected entities	Requirements established by this rule
Part 91—All Helicopter Operators	Revises § 91.155 Class G airspace weather minimums for part 91 helicopter operations. This rule provides a greater margin of safety for operators because pilots are required to maintain a fixed amount of visibility and would be less likely to suddenly encounter instrument meteorological conditions (IMC).
Part 135—All Rotorcraft Operators	• Requires each rotorcraft to be equipped with a radio altimeter (§ 135.160). 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. Additionally, radio altimeters help increase situational awareness during inadvertent flight into instrument meteorological conditions (IIMC), night operations, and flat-light, whiteout, and brownout conditions. • Adds § 135.168 equipment requirements for rotorcraft operated over water. Helicopter operations conducted over water will be required to carry additional safety equipment to assist passengers and crew in the event an accident occurs over water. • Revises alternate airport weather minimums for rotorcraft in § 135.221. This rule improves the likelihood of being able to land at the alternate airport if weather conditions in the area deteriorate while the helicopter is en route. • Revises § 135.293 to require pilot testing of rotorcraft handling in flat-light, whiteout, and brownout conditions and demonstration of competency in recovery from an IIMC. This rule improves safety by increasing a pilot's likelihood of escaping and handling IIMC and other hazards.
Part 135—Helicopter Air Ambulance Operators.	• Requires helicopter air ambulance flights with medical personnel on board to be conducted under part 135 (§§ 135.1, 135.601). The safety of helicopter air ambulance flights, including the welfare of the medical personnel and patients on board, will be increased when complying with the more stringent part 135 rules rather than part 91 rules. • Requires certificate holders with 10 or more helicopter air ambulances to establish operations control centers (OCC) (§ 135.619) and requires drug and alcohol testing for operations control specialists (§§ 120.105 and 120.215). OCC personnel will communicate with pilots, provide weather information, monitor flights and assist with preflight risk assessments providing an additional measure of safety for complex operations. Operations control specialists perform safety-sensitive functions, similar to an aircraft dispatcher, and therefore must be subject to the restrictions on drug and alcohol use. • Requires helicopter air ambulances to be equipped with HTAWS (§ 135.605). HTAWS will assist helicopter air ambulance pilots in maintaining situational awareness of surrounding terrain and obstacles, and therefore help prevent accidents.

TABLE 1—AFFECTED ENTITIES—Continued

Affected entities	Requirements established by this rule
	• Requires helicopter air ambulances to be equipped with a flight data monitoring system (§ 135.607). This will promote operational safety and can provide critical information to investigators in the event of an accident. • Requires each helicopter air ambulance operator to establish and document, in its operations manual, an FAA-approved preflight risk analysis (§ 135.617). A preflight risk analysis provides certificate holders with the means to assess and mitigate risk, and make determinations regarding the flight's safety before launch. • Requires pilots to identify and document the highest obstacle along the planned route (§ 135.615). This rule will prevent obstacle collisions by requiring pilots to be aware of the terrain and obstacles along their route. • Requires safety briefings or training for helicopter air ambulance medical personnel (§ 135.621). Medical personnel will be less likely to inadvertently introduce risk to an operation because of increased familiarity with the aircraft and emergency procedures. • Establishes visual flight rules (VFR) weather minimums for helicopter air ambulance operations (§ 135.609). More stringent VFR weather minimums for helicopter air ambulances operations in uncontrolled airspace will have the effect of ensuring that these operations are not conducted in marginal weather conditions. • Permits instrument flight rules (IFR) operations at airports without weather reporting (§ 135.611). This rule is intended to facilitate IFR operations by helicopter air ambulance operators and result in more aircraft operating in a positively controlled environment, thereby increasing safety. • Establishes procedures for transitioning between IFR and VFR on approach to, and departure from, heliports or landing areas (§ 135.613). This rule benefits pilots by enabling them to access more destinations by flying within the IFR structure and its associated safety benefits. • Requires pilots in command to hold an instrument rating (§ 135.603). Having the skills to navigate by instruments will assist helicopter air ambulance pilots to extract themselves from dangerous situations such as inadvertent flight into IMC.

Table 2. Comparison of Benefits and Costs over 10 Years by Population

Comparison of Benefits and Costs over 10 years (Millions)				
	Benefits	Costs	Present Value Benefits	Present Value Costs
Air Ambulance	$481	$286	$347	$224
Commercial	$124	$25	$83	$19
VFR Class G Airspace Helicopter Weather Minimums	$216	$0	$147	$0
Total	$821	$311	$577	$243

Table 3. Costs over 10 Years by Rule Provision

Costs and Present Value Costs of the Rule Over 10 Years (Millions)			
		Total	
		Costs	Present Value Costs
135.601	Applicability and Definitions	-	-
135.619	OCC	$77	$57
135.609-615	Operational Requirements	$29	$22
135.617	Pre-flight Risk Analysis	$56	$41
135.621	Safety Briefing/Medical Personnel Training	$21	$16
135.605	HTAWS	$54	$48
135.607	FDM System	$20	$18
135.603	Instrument Rating	$4	$4
135.221	IFR Alternate Weather	$0	$0
135.160	Radio Altimeter	$21	$16
135.168	Over-water	$3	$2
135.293	Competency in IMC	$26	$19
91.155	VFR Class G Airspace Helicopter Weather Minimums	$0	$0
		$311	$243

II. Background

A. Statement of the Problem

Helicopter air ambulance accidents reached historic levels during the years from 2003 through 2008.[1] The year 2008 was the deadliest. In 2008, five air ambulance accidents killed 21 people, including pilots, patients, and medical personnel. This rule addresses the causes of 62 helicopter air ambulance accidents that occurred during the period from 1991 through 2010. One hundred twenty-five people died in those accidents. The FAA identified four common factors in those accidents—inadvertent flight into IMC, loss of control, controlled flight into terrain (which includes mountains, ground, water, and man-made obstacles), and night conditions.

Helicopter air ambulances operate under unique conditions. Their flights are often time sensitive, which puts pressure on the pilots. Helicopter air ambulances fly 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. In an emergency, many patients will not have a choice of whether they want to be transported in a helicopter or not. They may be in a medical condition that prevents them from making decisions about transportation or indicating what they want. They cannot choose between competing carriers because the company that responds to the scene may be either the first one called or the only one in the area. For these reasons, the FAA is establishing more stringent safety regulations to protect patients, medical personnel, flightcrew members, and other passengers onboard helicopter air ambulances.

The FAA also identified an increase in accidents in other commercial helicopter operations. This rule addresses the causes of 20 commercial helicopter accidents that occurred from 1991 through 2010. Thirty-nine people died in those accidents. Also from 1991 to 2010, there were 49 accidents that occurred while the helicopter was operating under basic VFR weather minimums and those accidents caused 63 fatalities. The FAA has determined that these accidents may have been prevented if pilots and helicopters were better equipped for IIMC, flat-light, whiteout, and brownout conditions, and for flights over water.[2]

In addition to addressing the causal factors of these accidents, this rule also addresses National Transportation Safety Board (NTSB) safety recommendations and recommendations made by the Part 125/135 Aviation Rulemaking Committee (ARC).

B. Related Actions

The FAA has taken actions to address the problem of helicopter accidents, such as developing standards and issuing guidance, which were discussed in the Notice of Proposed Rulemaking (NPRM) (published October 12, 2010). In addition to the actions noted there, the FAA has revised its guidance materials to align with the provisions of this new rule.

ARC Recommendations

On April 8, 2003, the FAA formed the Part 125/135 ARC. This group was tasked to perform a comprehensive review of parts 125 and 135 and provide recommendations on rule changes. The ARC had close to 200 participants, representing a broad range of interests, and included members of the operator community, unions, trade associations, government, and manufacturers. The ARC worked for 2 years—from 2003 to 2005—and had eight working groups studying a wide range of subjects. They made the recommendations for helicopter air ambulance operations and other commercial helicopter operations that form the basis of several of the provisions in this final rule. ARC proposals addressed in this rulemaking include equipping helicopters with radio altimeters, increasing weather minimums for helicopter air ambulance operations, requiring additional safety equipment for overwater operations, requiring pilot testing on recovery from IIMC, and revising alternate airport weather requirements for instrument flight rules.

C. NTSB Recommendations for Helicopter Operations

Many of the requirements in this rule were developed, in part, in response to safety recommendations from the NTSB. The following is a list of those recommendations, what they required, and how they relate to the rules being codified today.

Recommendations on Helicopter Air Ambulance Operations

A–06–12—Recommends that the FAA require all emergency medical services (EMS) operators to comply with 14 CFR part 135 operations specifications during the conduct of flights with medical personnel on board. The FAA has addressed this recommendation in § 135.1, which requires helicopter air ambulance operations to be conducted under part 135 rules.

A–06–13—Recommends that the FAA require all EMS operators to develop and implement flight-risk evaluation programs that include training for all employees involved in the operation, procedures that support the systematic evaluation of flight risks, and consultation with others in emergency medical service flight operations if the risks reach a predefined level. The FAA has partially addressed this recommendation in § 135.617, which requires a preflight risk analysis prior to helicopter air ambulance operations.

A–06–14—Recommends that the FAA require EMS operators to use formalized dispatch and flight-monitoring procedures that include up-to-date weather information and assistance in flight risk assessment decisions. The FAA has partially addressed this recommendation in § 135.619, which requires OCCs for certificate holders with 10 or more helicopter air ambulances.

A–06–15—Recommends that the FAA require EMS operators to install terrain awareness and warning systems on their aircraft and to provide adequate training to ensure that flightcrews are capable of using those systems to safely conduct EMS operations. The FAA addressed this recommendation in § 135.605, which requires equipping helicopter air ambulances with HTAWS.

A–09–87—Recommends that the FAA develop criteria for scenario-based helicopter EMS pilot training that includes IIMC and hazards unique to helicopter emergency medical services (HEMS), and determine how frequently this training is required to ensure proficiency. The FAA has addressed this recommendation by revising § 135.293, which would require that pilots be tested on recognizing and avoiding flat-light, whiteout, and brownout conditions, and that they demonstrate recovery from IIMC.

A–09–89—Recommends that the FAA require helicopter air ambulance operators to implement a safety

[1] GAO, Aviation Safety: Potential Strategies to Address Air Ambulance Safety Concerns (2009).

[2] Flat light is the diffused lighting that occurs under cloudy skies, especially when the ground is snow-covered, greatly impairing the pilot's ability to perceive depth, distance, altitude, or topographical features when operating under VFR. *See* NTSB Safety Recommendation A–02–33. Whiteout occurs when parallel rays of the sun are broken up and diffused when passing through the cloud layer so that they strike a snow-covered surface from many angles. The diffused light then reflects back and forth countless times between the snow and the cloud, eliminating all shadows, resulting in loss of depth perception. *See* FAA AC 00–6A, Aviation Weather for Pilots and Flight Operations Personnel. Brownout conditions occur when sand or other particles restrict visibility and depth perception.

management system program that includes sound risk management practices. The FAA partially addressed this recommendation by requiring elements of a safety management system program for helicopter air ambulance operators. Section 135.607 requires equipping helicopter air ambulances with flight data monitoring systems, which can be used to identify risk. § 135.617 requires a preflight risk analysis for helicopter air ambulance operations, and § 135.619 requires OCCs for certificate holders with 10 or more helicopter air ambulances.

A–09–90—Recommends that the FAA require helicopter air ambulance operators to install flight data recording devices and establish a structured flight data monitoring program that reviews all available data sources to identify deviations from established norms and procedures and other potential safety issues. The FAA has partially addressed this recommendation in § 135.607, which requires equipping helicopter air ambulances with flight data monitoring devices.

Recommendations for Commercial Helicopter Operations

A–02–33—Recommends that the FAA require all helicopter pilots who conduct commercial passenger-carrying flights in areas where flat-light or whiteout conditions routinely occur to possess a helicopter-specific instrument rating and to demonstrate their competency during initial and recurrent 14 CFR 135.293 evaluation check rides. The FAA has addressed this recommendation by revising § 135.293, which requires testing pilots for recognition and avoidance of flat-light, whiteout, and brownout conditions, and a demonstration of recovery from IIMC. Also § 135.603, which requires an instrument rating for helicopter air ambulance pilots, addresses this recommendation.

A–02–34—Recommends that the FAA require all commercial helicopter operators conducting passenger-carrying flights in areas where flat-light or whiteout conditions routinely occur to include safe practices for operating in those conditions in their approved training programs. The FAA has partially addressed this recommendation in § 135.293, which requires pilot testing on recognizing and avoiding flat-light, whiteout, and brownout conditions, and a demonstration of recovery from IIMC.

A–02–35—Recommends that the FAA require installation of radio altimeters in all helicopters conducting commercial, passenger-carrying operations in areas where flat-light or whiteout conditions routinely occur. The FAA has addressed this recommendation in § 135.160, which requires installation of a radio altimeter in every helicopter operated under part 135.

A–06–17—Recommends that the FAA require all rotorcraft operating under 14 CFR parts 91 and 135 with a transport-category certification to be equipped with a cockpit voice recorder and a flight data recorder. The FAA has partially addressed this recommendation in § 135.607, which requires equipping helicopter air ambulances with a flight data monitoring system.

A–07–87—Recommends that the FAA require all existing and new turbine-powered helicopters operating in the Gulf of Mexico and certificated with five or more seats to be equipped with externally-mounted life rafts large enough to accommodate all occupants. As discussed below this recommendation is not addressed by this final rule.

A–07–88—Recommends that the FAA require all off-shore helicopter operators in the Gulf of Mexico to provide their flightcrews with personal flotation devices equipped with a waterproof global-positioning-system-enabled 406 megahertz (MHz) personal locater beacon, as well as one other signaling device, such as a signaling mirror or strobe light. The FAA partially addresses this recommendation in § 135.168, which requires that helicopters used in operations beyond autorotational distance from the shoreline be equipped with a 406 MHz locator beacon with a 121.5 MHz homing capability and that passengers wear life preservers when over water.

A–99–61—Recommends that the FAA amend record-keeping requirements in § 135.63(c) to apply to single-engine as well as multiengine aircraft. As discussed below this recommendation is not addressed by this final rule.

D. Congressional Action

On February 14, 2012, President Obama signed into law the FAA Modernization and Reform Act of 2012 (Pub. L. 112–95). Section 306 of the Act requires that part 135 certificate holders providing air ambulance services to comply with part 135 regulations pertaining to weather minimums and flight and duty time when medical personnel are onboard the aircraft. Section 306 also directs the FAA to conduct rulemaking on helicopter air ambulance operations which will address: (1) Flight request and dispatch procedures; (2) pilot training standards for preventing controlled flight into terrain and recovery from IIMC; and (3) safety-enhancing technology and equipment including, HTAWS, radio altimeters, and, to the extent feasible, devices that perform the function of flight data recorders and cockpit voice recorders. Additionally, the Act requires the rulemaking to address: (1) Flight risk evaluation programs; and (2) operational control centers for helicopter air ambulance services with 10 or more helicopters.

The FAA is also directed to conduct a subsequent rulemaking addressing pilot training standards, and the use of safety equipment that should be worn or used by flight crewmembers and medical personnel on helicopter air ambulance flights.

Section 318 of the Act requires the FAA to study the ''feasibility of requiring pilots of helicopters providing air ambulance services under part 135 . . . to use NVGs during nighttime operations.''

E. Summary of the NPRM

An NPRM was published in the **Federal Register** on October 12, 2010 (75 FR 62640). That notice proposed—

- Revised weather minimums for all helicopter operations under part 91.
- New load manifest requirements for all aircraft operations under part 135.
- New operations, training, and equipment requirements for all helicopter operations under part 135.
- New operations, training, equipment, and flightcrew requirements for helicopter air ambulance operations under part 135.

The comment period for that NPRM closed on January 10, 2011.

F. General Overview of Comments

The FAA received 179 comments about the proposal for this rulemaking. Among those commenting were 32 operators, 11 manufacturers, and 13 associations. Almost all of the commenters expressed support for the intent of the proposal but many suggested changes to individual requirements. Almost all of the provisions of the rule received some comment.

III. Discussion of Public Comments and Final Rule

This final rule affects three categories of operators—part 91 helicopter operators, part 135 helicopter operators, and helicopter air ambulance operators in part 135. Although addressed in the NPRM, the final rule does not contain a load manifest requirement for all aircraft operations under part 135. Following is a discussion of the current standards, each new rule as it was proposed, the public comments that

were received about that rule, and the final rule as it is adopted today.

A. Weather Minimums for Helicopters Flying Under Visual Flight Rules in Class G Airspace (§ 91.155)

Currently, helicopters operating in Class G airspace, under VFR and less than 1,200 feet above the surface, are required by § 91.155(b)(1) to remain clear of clouds and to operate at a speed that gives the pilot adequate opportunity to see any air traffic or obstruction in time to avoid a collision. The FAA proposed to revise § 91.155 to establish a minimum ½ statute mile visibility by day and one statute mile visibility at night. The FAA received comments expressing support for the proposal from the Air Medical Operators Association (AMOA), PHI Air Medical (PHI), NTSB, the National EMS Pilots Association (NEMSPA), members of the Association of Critical Care Transport (ACCT), LifeFlight of Maine, and REACH Air Medical Services, LLC (REACH). Other commenters expressed opposition based on the FAA's accident analysis and concern over operational limitations that are discussed below.

Accident Analysis

The Experimental Aircraft Association (EAA) commented that the FAA failed to provide documentation to support a change to § 91.155 for all general aviation and commercial helicopter operators. Kestrel Air commented that the FAA did not correlate the air ambulance accident rate with whether the helicopter was operating under part 91 or part 135. It noted that in the NPRM, the FAA cited emotional pressure on pilots to fly if they believed their flight could save lives, and said that this was considered a significant factor in the air ambulance industry's higher accident rate. Kestrel said that this factor is lacking in other part 91 operations, so there is no basis to presume the proposed change would have any positive impact on these other operators. The FAA notes that many operations under part 91, such as firefighting, police work, crop spraying, pipeline patrol, and power line repair can put pressure on a pilot and may be a contributing factor in their industry's accident rate.

Air Shasta Rotor and Wing, LLC (Air Shasta) commented that in a review of the last 5 years of NTSB non-EMS part 91 helicopter accident data, it was ''unable to find a particular accident that could have been avoided if the pilot did not have the proposed requirement'' of ½ mile visibility and clear of clouds. Likewise, Westlog, Inc. (Westlog) claimed that it could not find any accidents in the last 5 years of NTSB data that could have been avoided under this change.

The FAA acknowledges that the NPRM did not contain accident data relating to this proposed change. However, in response to these comments, the FAA conducted a review of accidents to determine whether NTSB accident data supports the proposal. A review of the accident history for the period from 1991 to 2010, the same time period used for the other provisions of this rule, showed that there were 49 helicopter accidents resulting in 63 deaths that may have been prevented had this rule been in place. The FAA determined that these accidents, which occurred when visibility was less than ½ mile during the day or 1 mile at night, and for which controlled flight into terrain, fog, rain, or other adverse weather were contributing factors, may have been prevented had the rule been in effect. Accordingly, the FAA has determined that the accident history supports this change.

Operational Limitations

Several commenters expressed concern that the proposed change would prevent operations that are currently being conducted safely. EAA stated that § 91.155 has been in effect since the early 1970s and has been safely used since that time. It noted that many helicopter operations such as firefighting, wildlife surveys, logging operations, off-shore fish sighting surveys, herding, crop spraying, and power line/high tension wire maintenance/surveys occur from remote field bases, with the majority of operations occurring close to those bases. Further, EAA stated that pilots, based on their experience, are the best judge of what speed and visibility are acceptable for safe operation in those circumstances and that ''to impose a visibility limit shows the FAA does not truly understand the entire scope of what commercial and private helicopter missions are and their combined effect on the national economy.''

Commenters from EGLI Air Haul also believe that part 91 should remain unchanged so that the pilot can decide whether visibility is adequate. In support of leaving the regulation unchanged, they cited an instance when an EGLI pilot made a decision to fly in conditions below those proposed in the NPRM to aid survivors of an airplane crash who were trapped on a mountainside. They contend that the proposed change to § 91.155 would have prevented this pilot from reaching the survivors.

The Los Angeles County Sheriff's department wrote that public safety agencies must be able to make ''go/no go'' decisions based on the higher experience level of their pilots and knowledge of the local flying areas. The commenter stated that weather restrictions would limit its ability to perform numerous search and rescue missions. Air Shasta also stated that a ''detrimental consequence of these proposed limitations would be cancelling or delaying of search and rescue missions'' it occasionally performs.

Westlog stated that the current requirement is safe for helicopters operating clear of clouds because they can stop and land at zero airspeed and commented that this helicopter operation is safer than an airplane operating clear of clouds at night with one mile of visibility when within ½ mile of the runway under § 91.155(b)(2). Additionally, Westlog noted that it operates in coastal Oregon and Northern California and frequents uncontrolled airports served by automated weather observation systems (AWOS). Because coastal advection fog is common in this area, the commenter explained, an AWOS will often report ¼ mile visibility when over half the airport is clear, with 15 miles visibility or more. Westlog claimed that, even with a reported ¼ mile visibility, a helicopter can take off safely under visual flight rules by simply departing into the non-foggy area. Air Shasta similarly commented that it has performed numerous searches when conditions at the departure airport were below what was proposed in the NPRM, but where it could find a point at the airport that was clear enough to depart safely.

One commenter, Safety and Flight Evaluations, International stated that the proposed rule would have an insufficient impact on safety because the proposed weather minimums are equivalent to § 135.205(b) and that the visibility requirements should be doubled to 1 statute mile during the day and 2 statute miles at night.

The FAA has determined that the change proposed in the NPRM is warranted. As discussed above, the FAA has identified numerous accidents that may have been prevented had the changes been in place. In response to Westlog's comments about foggy conditions and readings by an AWOS, the FAA is aware that visibility at some parts of an airport may be sufficiently clear to conduct operations even though the AWOS is reporting minimum visibility. Section 91.155 establishes flight visibility requirements for part 91 VFR operations. Therefore, if the pilot

determines that flight visibility [3] meets the requirements of § 91.155 at the takeoff location, despite the weather reported by the AWOS, the pilot may take off.

The FAA recognizes that this change will prohibit operations that are currently conducted in very low visibility conditions in Class G airspace, including civil and public aircraft operations. However, the FAA has determined that the increased safety justifies any prohibitions that would result. Under current regulations, an operator may apply for a certificate of waiver from § 91.155. The Administrator may issue a certificate of waiver if a proposed operation can be safely conducted. *See* 14 CFR 91.903–91.905. The FAA has determined that this existing waiver authority will provide sufficient flexibility to operators that can safely conduct operations when visibility is below the requirements established in this rule.

In response to the comment by Safety and Flight Evaluations, International that the visibility requirements should be doubled, implementing more restrictive visibility minimums than those proposed would be outside of the scope of the proposed rule.

Final Rule

Based on the comments received and an additional review of the NPRM, the FAA is adopting the rule as proposed with two changes. First, the agency has changed proposed § 91.155(b)(1) to allow helicopters to operate clear of clouds in an airport or heliport traffic pattern within ½ mile of the runway or helipad of intended landing if the flight visibility is ½ statute mile or more. The agency finds that this revision will provide an additional measure of flexibility when operating at night in an airport environment similar to that afforded to airplanes under the current rule. Second, for consistency with the existing regulation, the final rule incorporates the visibility minimums into § 91.155(a), instead of § 91.155(b)(1) as proposed in the NPRM.

B. Load Manifest Requirement for All Aircraft Operating Under Part 135 (§ 135.63)

Currently, § 135.63 requires operators of multiengine aircraft to complete a load manifest in duplicate and carry one copy aboard the aircraft. No specific action is required for the second copy, but certificate holders must retain a copy of the completed load manifest for at least 30 days. Single engine aircraft currently have no requirement to prepare a load manifest.

In the NPRM, the FAA proposed to apply the rule to all airplanes and helicopters, single engine and multiengine, operating under part 135, and to clarify the requirements for preparation and transmission of the load manifest. The proposal required that the load manifest be sent to the certificate holder's principal base of operations or to another location approved by the Administrator, where it must be received before takeoff. The proposal allowed for the load manifest to be provided electronically. It required that if the load manifest is not received by the certificate holder's principal base of operations before takeoff, the pilot must prepare two copies and carry one copy on the aircraft to its destination and arrange, at the takeoff location, for the second copy to be sent to the certificate holder or retained until the flight is complete at a location approved by the Administrator.

The FAA estimated this provision would impose costs of $82 million (present value) over 10 years while the benefits were estimated at $20 million (present value) over 10 years. The FAA requested comments on the cost of the load manifest provision.

The NTSB supported this revision and commented that it responds to NTSB Safety Recommendation A–99–61. The Association of Air Medical Services (AAMS), NEMSPA, Helicopter Association International (HAI), and Angel One Transport supported the intent to maintain accurate load manifest records, but they, and many other commenters, expressed concerns about the cost, justification, and operational impact of this requirement. Commenters noted the high cost of this requirement and questioned how this provision would prevent accidents.

Based on the comments received and additional review of the NPRM, the FAA is withdrawing the load manifest requirement proposed in the NRPM because of the excessive cost of this provision. Therefore, the current rule language in § 135.63 remains unchanged.

The FAA notes that other regulations currently in place require pilots to comply with the operating limitations of the aircraft and to be familiar with all information concerning a flight, which would include the type of information included on a load manifest. *See* §§ 91.9(a) and 91.103. Additionally, the FAA will consider issuing guidance material in order to clarify the requirements for preparation and transmission of the load manifest.

C. Rules Applicable to All Part 135 Helicopter Operations

1. Radio Altimeters (§ 135.160)

The FAA proposed a new requirement for all rotorcraft operated under part 135 to be equipped with a radio altimeter. Commenters, including AAMS and various ACCT members, supported this proposal. The NTSB supported it as well and emphasized that, if adopted, this proposal would respond to NTSB Safety Recommendation A–02–35.

Other commenters, however, objected to this provision on grounds that radio altimeters are not effective in all situations, that the rule would not be cost beneficial, and that not all helicopters can incorporate radio altimeters. These comments are discussed in detail below.

Effectiveness

PHI claimed radio altimeters have minimal impact on pilots flying by visual reference in daytime and that the accident record shows that radio altimeters have not prevented controlled-flight-into-terrain accidents. NorthStar Trekking, an Alaskan operator, commented that radio altimeters are unreliable, give erroneous information over snow-covered surfaces, and realistically create nothing more than a distraction in a day VFR environment. One commenter stated that TAWS is a better investment because radio altimeters ''tell distance to where the aircraft has already been not where it's going to impact.''

Finally, FreeFlight Systems, an avionics manufacturer, commented that the radio altimeter should have the ''performance guarantees of [Technical Standard Order] TSO–C87 and be designated in accordance with DO–178B and DO–254 with at least a Level C design assurance.'' It further stated that some radio altimeters with ''only a PMA—lacking a TSO'' are less accurate at low altitudes which could impact the ability to gauge altitude in critical conditions.

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. Although it is true that a radio altimeter may have minimal impact on daytime visual reference flight, this device gives pilots an additional tool to maintain situational awareness in an inadvertent encounter with IMC, where vision is suddenly limited due to brownout or whiteout, or other situations where pilots lose their reference to the horizon and the ground. Additionally, as stated in the NPRM, a radio altimeter can aid a pilot's

[3] See 14 CFR 1.1.

awareness of height above the ground during hover, when landing in unimproved landing zones, or where a more vertical approach is required. All of these scenarios can occur during the day.

In response to the comments that a radio altimeter may not prevent a controlled-flight-into-terrain accident, as discussed in the NPRM, NTSB safety recommendation A–02–35 noted that radio altimeters might aid pilots in recognizing proximity to the ground in flat-light and whiteout conditions. Additionally, the FAA cites 29 accidents in the final regulatory evaluation that may have been prevented by a radio altimeter. Of the 29 accidents, 19 were classified as controlled flight into terrain by the NTSB. A radio altimeter could have provided the pilot with a low altitude warning, enabling the pilot to take corrective action.

In response to NorthStar Trekking, the FAA acknowledges that, in limited circumstances, such as when operating over dry snow or still water, a radio altimeter may provide inaccurate altitude readings. Improper installation of a radio altimeter may exacerbate this problem. The FAA has determined that these infrequent inaccurate readings do not outweigh the safety benefits that will be obtained by requiring installation of radio altimeters in the commercial helicopter fleet.

In response to the comment that this device only tells where the aircraft has been, meaning that it cannot detect obstacles in the flight path, a descending altitude read-out on the radio altimeter could alert a pilot to rising terrain or decreasing altitude over level terrain. Accordingly, although the radio altimeter does not reveal obstacles in the flight path, it does provide valuable information to maintain situational awareness. The FAA agrees with the commenter that TAWS or HTAWS are valuable tools, but is not going to extend the requirement to equip with one of these devices to the entire part 135 helicopter population at this time. Rather, as discussed later in this document and in the NPRM, the FAA is requiring HTAWS for helicopter air ambulance operations because they are often conducted at night and into unimproved landing sites.

Finally, the FAA is not requiring a radio altimeter that meets Technical Standard Order TSO–C87. The FAA determined that an FAA-approved radio altimeter is sufficient because the intended function is demonstrated regardless of the type of FAA approval. A radio altimeter may be approved in one of four ways: Under a Parts Manufacturer Approval; under a TSO authorization; in conjunction with type certification procedures for a product; or approved in any other manner by the Administrator. *See* 14 CFR 21.303. The minimum performance of a TSO or a parts-manufacturer-approved radio altimeter must be demonstrated to meet the intended function.

Cost

NorthStar Trekking commented that contrary to the FAA's assertion that the cost of radio altimeters is negligible, an altimeter costs roughly $6,000, with an additional $500 in maintenance annually—money that could be better spent on training, early retirement of parts, extra pilots, and appropriate avionics that ''truly have an effect on our overall safety. . . .'' It further stated that the accident cited in the NPRM would not have been prevented by a radio altimeter. It noted that the accident may have been far worse had a radio altimeter been installed on the helicopter because of snow and fog, and had the pilot tried to maintain a higher altitude by use of a radio altimeter he may have flown into IMC conditions.

Westlog claimed that requiring a non-air ambulance operator to have a radio altimeter installed is simply too onerous with very little documented benefit. Westlog based this comment on its review of NTSB accident data for the non-air ambulance part 135 helicopter industry. It noted that the only non-air ambulance accident cited in the NPRM occurred in Alaska and maintained that a radio altimeter requirement is not justified for all geographic locations. In response to Westlog's comment, the FAA notes that it identified 11 non-air ambulance commercial helicopter accidents in the final Regulatory Evaluation that might have been prevented if an operational radio altimeter had been installed in the aircraft. These accidents were also cited in the initial Regulatory Evaluation published in the docket with the NPRM.

With respect to the comment on the cost of a radio altimeter, in the initial regulatory evaluation, the FAA estimated the cost of a radio altimeter to be $5,250 (including installation), plus revenue losses for downtime during installation. For the final regulatory evaluation, the FAA revised this cost estimate to a $9,000 cost for the device, which was the highest estimate given by commenters, plus $500 annually for maintenance.

Need for Flexibility

Westlog and Air Shasta expressed concern that their helicopters cannot accommodate additional equipment. Both commenters said that if they are forced to install a radio altimeter, they would have to remove vital equipment, such as the artificial horizon, because there is no room to fit anything more on the instrument panel. Several commenters, including REACH, supported the rule, provided they were able to continue operation without a radio altimeter within a limited period and with acceptable alternative procedures as prescribed under minimum equipment lists (MELs).

The final rule states that an operator must have an ''FAA-approved radio altimeter, or an FAA-approved device that incorporates a radio altimeter. . . .'' The FAA recognizes that limited numbers of older helicopters used in part 135 operations (e.g. Bell–47, Robinson R–22) may not have adequate room on the flight deck to install a radio altimeter. In response to these comments, the FAA is including the ability for a certificate holder to obtain a deviation from the rule for circumstances when a radio altimeter cannot physically be located on the flight deck. However, we also note that an HTAWS or other device such as a multi-function display that incorporates a radio altimeter would be permitted under this rule. Deviation authority may not be warranted for helicopters in which a radio altimeter can be incorporated into the flight deck's existing configuration. Additionally, the operator may not use information derived from a global positioning system (GPS) as a substitute for a radio altimeter.

Finally, the FAA notes that the rule language proposed in the NPRM exempting operators from the radio altimeter requirement when ''authorized in the certificate holder's approved'' MEL is adopted in the final rule. The particular requirements relating to operations with inoperable radio altimeters would be developed by FAA's Flight Standards Service in accordance with its existing master minimum equipment list (MMEL) process.

Compliance Date

The FAA asked for comments on the proposed 3-year compliance period for the radio altimeter provision. The NTSB responded that the compliance period for this requirement should be reduced to 1 year because radio altimeters are readily available for helicopter installation. FreeFlight Systems encouraged adoption as soon as possible, but commented that a 3-year time frame ''seems reasonable since affordable, light-weight equipment is already available.'' The FAA also notes

comments discussed above regarding concerns about the time it takes to obtain FAA approval for equipment installations.

The FAA is implementing the 3-year compliance period proposed in the NPRM. We have determined, based on the comments, that part 135 helicopter operators will be able to comply with the rule in that time period. The FAA also does not anticipate undue delay in approving radio altimeter installations because they are readily available on the market and installation procedures are well established.

Requirement for Helicopter Air Ambulances To Be Equipped With Radio Altimeters and HTAWS

The FAA proposed that helicopters used in air ambulance operations be equipped with both a radio altimeter and an HTAWS unit and asked for comments on the safety benefits of installing both devices. The FAA is requiring in the final rule that helicopter air ambulances be equipped with both a radio altimeter and HTAWS. Aviation Solutions Group, LLC, a member of ACCT, agreed with the proposal to require both technologies to ''provide optimal situational awareness.'' This comment was echoed by other ACCT members. LifeFlight of Maine commented that use of a radio altimeter and HTAWS provides multiple sources of low-altitude warnings to pilots.

We reiterate the statements in the NPRM that an HTAWS that incorporates or works in conjunction with a radio altimeter function would meet the requirements of § 135.160 because those units measure altitude by actively sending radio signals to the surface. They do not rely on a preprogrammed database to derive altitude information. Therefore an HTAWS without a radio altimeter function would not meet the requirements of § 135.160.

The rule is adopted as proposed.[4]

2. *Safety Equipment for Overwater Operations (§§ 1.1, 135.117, 135.167, and 135.168)*

Currently, aircraft operating in extended overwater operations must comply with the equipment requirements in § 135.167. Current § 1.1 defines extended overwater operations for helicopters as an operation at a horizontal distance of more than 50 nautical miles (NM) from the nearest shoreline and 50 NM from an off-shore heliport structure. Additionally, operators must comply with overwater equipment requirements in § 91.205(b)(12) and performance requirements for aircraft in § 135.183 when conducting overwater operations.

In the NPRM, the requirements for helicopter overwater operations were contained in a new section, § 135.168. Additionally, the NPRM proposed removing the reference to off-shore heliports from § 1.1 to define extended overwater operations as operations more than 50 NM from the nearest shoreline. The FAA proposed to amend § 135.167 to exclude rotorcraft. The FAA received comments on the framework of the proposed rule and the equipment requirements. Based on these comments and further review of the NPRM, the FAA has made significant revisions to this rule.

Primarily, the FAA has removed the requirement for helicopters to equip with life rafts when beyond autorotational distance from the shoreline. The FAA is removing the life raft requirement proposed in the NPRM because the cost of equipping with life rafts would not be justified by an increase in the survivability of accidents. The FAA reviewed accidents to ascertain the cost and benefit of each piece of equipment proposed in the NPRM and determined that benefits from the accidents cited in the NPRM do not justify the costs of imposing the life raft requirement. This is for two reasons. First, there are relatively few accidents beyond autorotational distance from the shoreline. Second, 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. Accordingly, the proposed life raft requirement is not being implemented in the final rule.

The FAA is also not implementing the proposed revision to the definition of ''extended over-water operation'' in § 1.1. That definition would have been revised so that the equipment requirements for extended over-water operations would take effect at the same distance from shore for helicopters and airplanes. Currently, helicopters are allowed more flexibility. However, we are withdrawing this revision because it was tied to the life raft proposal.

Additionally, the final rule does not adopt the changes proposed to § 135.167 which would have made that section applicable only to airplanes. The removal of the proposed life raft requirement makes it necessary to leave § 135.167 as it is so that the existing equipage rules, which include a life raft requirement, apply to helicopters engaged in extended overwater operations.

Nevertheless, as discussed below, the FAA is retaining the requirements that life preservers be worn when the aircraft is operated beyond autorotational distance from the shoreline and for helicopters to be equipped with a 406 MHz ELT. The FAA believes it is important to provide passengers with this base level of equipment to increase the odds of surviving a crash into the water. As discussed above, when conducting the accident analysis, the FAA reviewed each piece of equipment proposed in this provision and found that, of the proposed equipment, life preservers would generate the most benefits.

The FAA is not adopting the proposed pyrotechnic signaling device requirement because § 91.205(b)(12) currently requires aircraft operated overwater to be equipped with ''at least one pyrotechnic signaling device.''

406 MHz Emergency Locator Transmitters

This final rule requires that each helicopter have an approved emergency locator transmitter (ELT)—ELT 406/121.5MHz. The NPRM proposed a TSO–C126a approved 406 MHz ELT that only needed to be carried on the rafts. The final rule language has been changed to require that single and multiengine helicopters, not the raft, be equipped with an ELT. This will ensure that all helicopters that conduct operations beyond autorotational distance from the shoreline will have the added safety benefit of a rescue locating and signaling device. This final rule requires an ELT that transmits on the 406 MHz frequency but also includes a low-power 121.5 MHz homing device. The 121.5 MHz frequency remains allocated to aviation emergencies and continues to be monitored by air traffic control, flight service stations, other emergency organizations, and aircraft. We also note that since publication of the NPRM the FAA published TSO–C126b, dated November 26, 2012, which does not allow using hook and loop fasteners to secure the ELT in the aircraft.

Operators required to comply with this rule can find ELT minimum performance standards in FAA TSO–C126b ''406 MHz Emergency Locator Transmitter,'' dated November 26, 2012. The FAA notes that the prior versions of the TSO, TSO–C126a dated December 17, 2008, and TSO–C126 December 23, 1992, provide minimum performance specifications for 406 and 121.5 MHz ELTs that are similar to those found in TSO–C126b. FAA TSO–C126 refers to RTCA DO–204 ''Minimum Operational

[4] Section 306(c)(3) of the FAA Modernization and Reform Act of 2012 (Pub. L. 112–95) requires the FAA to conduct a rulemaking that addresses use of radio altimeters in helicopter air ambulance operations.

Performance Standards for 406 MHz Emergency Locator Transmitters,'' dated December 23, 1992, and FAA TSO–C126b and TSO–C126a refer to RTCA DO–204a ''Minimum Operational Performance Standards for 406 MHz Emergency Locator Transmitters,'' dated December 6, 2007. Accordingly, the FAA has changed the rule language to allow TSO–C126, TSO–C126a, and TSO–C126b approved ELTs.

RTCA DO–204 and DO–204a include minimum performance standards for both 406 and 121.5 MHz ELTs. When beneficial to the operator, the FAA will consider approving installations of a stand-alone 406 MHz ELT to augment an existing 121.5 MHz ELT installation.

Life Preservers

In the NPRM, the FAA proposed to include a requirement in § 135.168 that occupants in overwater operations wear life preservers equipped with a survivor locator light from takeoff until the flight is no longer over water.

PHI asked the FAA to strike the words ''from takeoff until the flight is no longer over water'' from the overwater life preserver requirement of § 135.168 and replace them with ''during the overwater portion of the flight.'' AMOA asserted that the rule should not require passengers to wear life preservers, but rather the life preservers should ''be easily accessible'' during overwater operations. Med-Trans proposed a change that would exempt the patients on board medical helicopters from life preserver and briefing requirements.

Many commenters recommended that the FAA exclude patients from life preserver requirements because wearing a life preserver could interfere with the patient's medical care. These comments mirrored a part 125/135 ARC recommendation. The FAA did not intend to require transported patients to wear life preservers if doing so would impede the ability of medical personnel to treat that patient or if it would be inadvisable for medical reasons, such as a need to keep the patient still. Accordingly the FAA has revised § 135.168(b)(1) to reflect this intent.

The FAA agrees with commenters that passengers should be able to don life preservers only for the overwater portion of the flight. After reviewing the proposal, the FAA recognizes that a flight may spend significant time over land before it travels over water. The FAA has amended the final rule to require that occupants wear life preservers while the helicopter is beyond autorotational distance from the shoreline.

Applicability

As proposed in the NPRM and adopted in this final rule, § 135.168 contains an operational solution that addresses commenters' concerns about flights that only cross narrow bodies of inland water or bays. A helicopter does not need to be equipped with a 406 MHz ELT and life preservers if it crosses the water at an altitude within autorotational glide distance of the shore. Autorotational distance refers to the forward distance a helicopter can glide without engine power. During autorotation the rotors continue turning because of the air moving through the rotor as the helicopter loses altitude. Thus, an operator can avoid the need for the additional safety equipment by flying close to the shoreline or at a higher altitude. For example, for a helicopter that has a glide ratio of 3 feet forward to 1 foot of descent, a pilot flying at an altitude of 1,000 feet would be able to operate at least ½ mile from a shoreline without needing overwater equipment. This provides flexibility for operators that fly over narrow bodies of water while still providing the additional level of safety for overwater and extended overwater operations. This standard is consistent with current requirements under § 135.183.

Final Rule

Based on the comments received and additional review of the NPRM, the FAA has adopted § 135.168 with revisions. The most significant changes are to the requirements for helicopter overwater operations in § 135.168. The FAA has not adopted the proposed requirements for life-rafts and pyrotechnic signaling devices or the proposed changes to the definition of extended overwater operations in § 1.1. The proposed amendment to § 135.167 is not adopted.

The final rule requires helicopters to be equipped with a 406 MHz ELT and occupants to wear life preservers on helicopter flights operated beyond autorotational distance from shoreline.

The FAA also notes that passenger briefing requirements proposed in the NPRM as § 135.168(d) have been moved to § 135.117, Briefing of passengers before flight. No substantive changes were made to the briefing requirements.

These changes will take effect 3 years after this rule's publication.

3. Pilot Testing for Recovery From IIMC, Whiteout, Brownout, and Flat-Light Conditions (§ 135.293)

The FAA proposed adding new requirements to § 135.293 to require helicopter pilots to demonstrate recovery from an IIMC on an annual basis and to understand procedures for aircraft handling in flat-light, whiteout, and brownout conditions. Twelve commenters, including AAMS, Air Methods Corporation (Air Methods), AMOA, REACH, and the NTSB supported the proposed change. Twenty-one commenters, including PHI, did not agree with the proposal as written.

Some commenters stated that the testing requirements should be tailored to the certificate holder's operating environment. NorthStar Trekking, an Alaskan operator, noted that it trains its pilots for flat-light and whiteout conditions, but not for brownout conditions. Jack Harter Helicopters stated that because it does not operate in areas where whiteout or brownout are likely, it should not be required to include those conditions in its training program. PHI stated that a majority of its operations rarely encounter flat-light or whiteout conditions, and mandating training for those conditions for all operators would be an onerous requirement.

PHI also stated that this regulation would be redundant with § 135.329(e)(1), which requires training specific to a certificate holder's type of operation. The NTSB commented that the FAA should require operators to incorporate safe practices for operations in flat-light and whiteout conditions in their training programs.

LifeFlight of Maine and other ACCT members commented that the IIMC recovery training should be demonstrated semi-annually. Several individual commenters recommended quarterly training for pilots to maintain proficiency.

AAMS, AMOA, and Air EVAC EMS commented that pilots should be able to use simulators and flight training devices to complete this training. The NTSB also supported increased use of simulators for helicopter pilot training.

The FAA finds that helicopter pilots would benefit from annual testing on all three conditions—whiteout, flat light, and brownout. Although some conditions may be more prevalent in certain areas, such as whiteout conditions in Alaska or brownout conditions in desert environments, these conditions may occur year-round in many places. This testing will help ensure that pilots have a base-level knowledge should they encounter these conditions. To clarify, the rule requires that pilots, on the annual written or oral test required by § 135.293(a), demonstrate knowledge of procedures for aircraft handling in flat-light, whiteout, and brownout conditions, and

methods for recognizing and avoiding these conditions. They would be required to demonstrate a realistic course of action to escape IIMC during the § 135.293(b) competency check. As discussed in the NPRM, the FAA intends for this demonstration to be appropriate to the aircraft, equipment, and facilities available to the pilot during the competency check. The FAA finds that an annual check is sufficient because it can be incorporated into a certificate holder's existing competency check schedule.

This new requirement does not duplicate the crewmember training requirements of § 135.329(e)(1). That section requires, in part, crewmember training, instruction, and practice to ensure that each crewmember remains adequately trained and proficient for each type of operation in which that crewmember serves. While operators may include training on flat-light, whiteout, brownout, and IIMC recovery in training programs, this rule's amendments ensure that these topics will be tested during a pilot's annual competency check. The FAA anticipates that such training will be incorporated into training programs so that pilots will be adequately prepared for their annual competency checks.

We note that the IMC recovery portion of the competency check could be performed in a simulator or flight training device, provided that it is consistent with that device's specific approval.

Final Rule

This rule is adopted as proposed and will take effect 60 days after publication of the final rule.[5] Section 135.293 requires individuals to complete testing in the 12 calendar months prior to serving as a pilot in part 135 operation. The FAA does not intend for pilots to be retested before the new testing requirements take effect. Rather, pilots must comply with the new requirement during their next § 135.293 test.

4. IFR Alternate Airport Weather Minimums (§ 135.221)

Current rules, as provided for in § 135.221, require that to designate an alternate airport for an IFR operation, weather reports or forecasts for that airport must be at or above the alternate airport landing minimums for that airport at the estimated time of arrival. In the NPRM, the FAA proposed to require a more stringent alternate airport weather requirement for rotorcraft, based on minimums established in Operations Specification (OpSpec) H105. Several commenters, including the NTSB, ACCT members, PHI, and AAMS supported the proposed change.

Kestrel Air commented that the FAA proposed this requirement without establishing a connection between existing standards and accidents involving part 135 helicopter operators and that there is no accident history to support this proposal.

Safety and Flight Evaluations, International agreed that increased weather minimums would increase the likelihood of being able to land at the alternate if weather deteriorates. However, it also stated that because it is often more difficult for a helicopter to fly out of a weather system to an alternate airport, as noted in the NPRM, that ''there is little likelihood that an alternate airfield exists that would have significantly different weather conditions than at the primary airfield.'' Accordingly, Safety and Flight Evaluations, International stated that the rule would discourage pilots from flying IFR.

Kestrel Air is correct that the FAA did not cite any accidents to support this proposal. However, as noted in the NPRM, this proposal is based on OpSpec H105, which is issued to all part 135 helicopter operators that conduct IFR operations. Accordingly, this rule change will not require operational changes for these certificate holders, so no additional costs will be incurred. OpSpec H105 has established these minimums and the FAA does not anticipate a change in IFR usage.

This rule is adopted as proposed.

D. Rules Applicable to Helicopter Air Ambulance Operations

This final rule establishes several new requirements for certificate holders conducting helicopter air ambulance operations. It changes the applicability section of part 135 (§ 135.1) to require some operations that have been conducted under part 91 to be conducted under part 135. Additionally, this rule establishes new equipment, operations, and training rules for certificate holders conducting air ambulance operations which are codified in new subpart L, §§ 135.601–135.621.

1. Applicability of Part 135 Rules to Helicopter Air Ambulance Operations (§§ 135.1, 135.267, 135.271, 135.601)

The FAA proposed requiring that all helicopter air ambulance operations with medical personnel on board be conducted under part 135 operating rules. Flights to pick up a patient, the patient transport leg, and the flight returning to base after the patient is dropped off, or other flights with a patient or medical personnel on board would be conducted under part 135. The FAA received many comments from organizations and individuals supporting and opposing this proposal. Comments addressed the FAA's accident analysis which formed the basis of the regulatory evaluation; whether part 135 is the appropriate part of the regulations for this change and whether repositioning flights should continue to be operated under part 91; potential limitations on operations; flight and duty questions; and how the FAA defined flights to be conducted under part 135. These comments are addressed in detail below.

Definition of Medical Personnel

The NPRM defined ''medical personnel'' as ''persons with medical training, including, but not limited to a flight physician, a flight nurse, or a flight paramedic, who are carried aboard a helicopter during helicopter air ambulance operations in order to provide medical care.'' With this rule, any flights for medical transportation that carry a patient or medical personnel must now be conducted under part 135 rules.

NEMSPA suggested a change in the definition of medical personnel to ''medical personnel means persons approved by State or Federal EMS regulations who are carried aboard a helicopter during helicopter air ambulance operations in order to provide onboard medical care.'' AMOA requested a change in the proposed definition of medical personnel to ''persons who are carried aboard a helicopter during helicopter air ambulance operations in order to provide onboard medical care'' because the rule would limit the types of medical professionals often transported and could confuse the rule.

The FAA clarifies that this definition is intended to be applied broadly to individuals who might be carried aboard to provide care. Requiring medical personnel to be approved under State or Federal EMS regulations may result in preventing people currently performing these functions from performing them any longer, because they may be licensed medical professionals but not certified under state or federal EMS regulation. For example, a nurse might be certified to practice by the State board of nursing, but not under a State's EMS regulations. Limiting the definition to this certification could also have the

[5] Section 306(c)(2) of the FAA Modernization and Reform Act of 2012 (Pub. L. 112–95) requires the FAA to conduct a rulemaking that addresses pilot training standards in preventing controlled flight into terrain and recovery from IIMC.

unintentional result of allowing operators to use medical caregivers who are not specifically certified under State or Federal EMS regulations. As a result, these individuals would not be included in the definition and thus the operator could avoid the part 135 requirements.

Additionally, we note that the definition of medical personnel proposed in the NPRM referenced ''persons with medical training, *including but not limited to* a flight physician, a flight nurse, or a flight paramedic. . . .'' (See 75 FR 62621) (emphasis added). Accordingly, the definition does not apply to those persons only. Any person with medical training who is ''carried aboard a helicopter during helicopter air ambulance operations in order to provide medical care'' would fall into the definition of medical personnel. The FAA notes that it made a non-substantive change to the definition of ''medical personnel'' to clarify that the definition could apply to a single person as well as to a group.

Accident Analysis

AMOA and PHI contended that the FAA's accident analysis used to justify placing more operations under part 135 was flawed because it categorized flights as occurring under part 91 when, in fact, many were conducted under part 135 rules. Both organizations cited a 1992 memorandum of understanding (MOU) between the NTSB and the FAA that established how air ambulance accidents would be categorized. Pursuant to the MOU, the NTSB categorized accidents involving air medical flights without a patient on board as part 91 accidents. These commenters maintained that many of the accidents categorized as occurring under part 91 actually happened when the helicopter was operating under part 135 rules even though no patient was on board. HAI commented that its members that conduct air medical operations ''currently operate to the requirements of OpSpec A021, which are higher than current part 135 weather minimums, on any leg of a patient transport flight whenever medical personnel are on board. . . .''

The NTSB noted in its comment that, as detailed in its *Special Investigation Report on Emergency Medical Services Operations,* 32 of the 41 helicopter air ambulance accidents investigated by the NTSB occurred while the aircraft was operating under the flight rules specified in part 91.

The FAA acknowledges that the commenters correctly described the way accidents are categorized under the MOU. In light of the information received from the commenters, the FAA reviewed the accidents cited in the NPRM to determine whether the accidents categorized as part 91 accidents were properly used to justify changes to the rule. The NPRM categorized 33 accidents (out of the 135 helicopter air ambulance accidents cited) as occurring during part 91 operations which were given as support for including those operations in part 135.

The FAA determined that 17 of those 33 accidents occurred while the helicopters were flying in weather minimums below those proposed and that will be required under § 135.609, accounting for 42 deaths. Although some operations were conducted under part 135, these flights were operated below the weather minimums for helicopter air ambulance operations proposed in the NPRM. Therefore, the accidents may have been prevented had these helicopters been operating under the stricter rules adopted here and are properly included in justifying this rule.[6]

Relationship Between Parts 91 and 135

AMOA, Air Evac EMS Inc. (Air Evac EMS), AAMS, NEMSPA, and PHI were among commenters that said that applying part 135 regulations to operations traditionally considered to be under part 91 is inconsistent with the current regulatory framework and could introduce confusion. Instead, these commenters said changes to enhance safety requirements for these operations should be made by amending part 91, not part 135. This would ensure the continuity and applicability of the current rules.

The NTSB supported the proposal and stated that it would likely meet the intent of Safety Recommendation A–06–12. However, it also stated that the list of flights conducted under part 135 must be as complete as possible and should include maintenance flights, training flights, helicopter positioning flights performed without medical crewmembers on board, and other operations that would not be required to be conducted under part 135 under this rule.

The commenters are correct that, as discussed in the NPRM, currently non-patient-carrying legs of helicopter air ambulance operations may be conducted under part 91. The FAA, through this rule, is requiring legs with medical personnel onboard to be conducted under part 135. The primary reason for this change is to protect medical personnel by ensuring that those flights are conducted under the more stringent operating rules of part 135. As noted by the NTSB, medical personnel ''cannot be expected to meaningfully participate in the decision-making process to enhance flight safety or to significantly contribute to operational control of the flight.'' Accordingly, the FAA determined that medical personnel deserve the same safety protections that part 135 provides to patients on helicopter air ambulance flights.

Additionally, the FAA is not changing the rule language to provide a more extensive list of flights that must be conducted under part 135. As discussed above, the rule is clear that if medical personnel or a patient are on board the aircraft and the flight is conducted for medical transportation, then it must be conducted under part 135. The non-exclusive list is intended to emphasize that the traditional three-legged helicopter air ambulance flight (base to pick-up site, pick-up site to drop-off site, drop-off site to base) must now be conducted under part 135.

Further, the FAA does not anticipate that the placement of these rules in part 135 rather than in part 91 will cause confusion for certificate holders. It is clear that these rules only apply to part 119 certificate holders authorized to conduct helicopter air ambulance operations under part 135. Part 135 is a logical place for the regulations affecting this population.

The FAA received several comments about this rule's impact on helicopter air ambulance operations. First, AMOA, Air Evac EMS, AAMS, NEMSPA, and PHI commented on the need for flexibility from the part 135 requirements during the repositioning leg for training purposes. They have traditionally used this leg for training newly hired second pilots on instrument approach procedures and stated that they cannot do the same kind of training when operating under part 135 rules as they can when operating under part 91 rules because the pilot in training would not be able to manipulate the controls. Commenters were concerned this proposal could significantly inhibit IFR operations by helicopter air ambulance operators. Second, HAI commented that a

[6] The remaining sixteen accidents originally identified as part 91 operations were flying above the weather minimums established in this rule and are therefore no longer being used to support § 135.609. However, 10 of these accidents were cited in the NPRM in support of other proposed rule provisions. The FAA finds that these accidents are still applicable to those provisions. Six accidents were removed from the final rule's accident analysis. See the Final Regulatory Evaluation for a full explanation of the accident analysis, and methodology used to review the accidents.

requirement to conduct helicopter air ambulance operations under part 135 would prevent operators from using GPS approaches certified for part 91 operations.

The FAA has determined that applying part 135 rules will have only a limited effect on training. Operators may continue training pilots on instrument approaches during flights with no passengers, medical personnel, or patients on board. The FAA has determined that the safety benefits of this rule outweigh the fact that certificate holders may need to conduct additional training flights.

The FAA finds HAI's concern about limitations on GPS approaches to be unwarranted. All instrument approaches are designed and certified to part 97 Terminal Instrument Procedures (TERPS) requirements. Use of these approaches is not restricted to flights conducted under certain operating rules. They can be used by an operator conducting flights under part 91, 121, or 135.

The NTSB also stated that although part 91 may provide additional ''operational flexibilities due to decreased visual flight rules (VFR) weather minimums and no flight crew rest requirements'' it believes that these benefits ''are greatly overshadowed by the increased risk that such operations have historically posed.''

Additionally, the FAA acknowledges that certificate holders may not be able to conduct certain operations because of the more stringent part 135 requirements. For example, the weather minimums may be below part 135 standards, but would have been acceptable for a part 91 operation. Similarly, additional part 135 flights may mean that a flightcrew member reaches flight time limitations more quickly. Nevertheless, the FAA has determined that these restrictions are appropriate given the increased safety of operations that are expected as a result of this regulation. However, the FAA is not extending this regulation to flights conducted without medical personnel onboard. The FAA has determined that such an extension would go beyond the stated rationale of providing additional protections to the medical personnel and passengers onboard the helicopter.

Air Methods commented that operators should follow the weather minimums specified in A021, which are more stringent than the baseline part 135 weather minimums. The FAA agrees and, as discussed later, is adopting those weather minimums into part 135 regulations applicable to helicopter air ambulance operations.

Flight and Duty Time Limitations (Proposed §§ 135.267 and 135.271)

As discussed in the NPRM, one impact of requiring flights traditionally conducted under part 91 to be conducted under part 135 is that these flights will now count toward a pilot's flight time limitations. In the NPRM, the FAA proposed adding language to §§ 135.267 and 135.271 to clarify that helicopter air ambulance operations conducted under part 135 must be included in a pilot's flight time.

Members of ACCT support including pilot duty time limitations in the change to require more helicopter air ambulance flights to be conducted under part 135. The Advanced Life Support and Emergency Response Team agreed with requiring flight time for a part 135 operation when medical personnel are on board to count toward a pilot's daily flight time limitations and stated it already operates under this policy.

PHI, AMOA, and Air Evac EMS commented that the current flight time and duty limitations in § 135.267 should not be altered. PHI believes the proposal is inconsistent with FAA regulatory structure and discriminates against the helicopter air ambulance industry without justification. AMOA does not agree with adoption of § 135.267(g).

PHI also commented that there currently are no part 135 regulations that prevent a pilot from flying while fatigued. The commenter said that the pertinent regulation resides in part 91, part 135 operators must comply with part 91, and that current rest and duty requirements do not guarantee that a pilot will not be fatigued, even if complying with the regulations. Air Evac EMS commented that §§ 91.13 and 135.69(a) afford sufficient protection and claimed that the best measure against pilot fatigue is the pilot knowing when to decline a flight request and appropriate oversight.

AMOA and Air Methods claimed that no accidents as a result of crew rest issues were cited to support this proposal and its change is a profound shift in the agency's regulatory structure that would cause pilots to rush to stay within the prescribed duty period. PHI and AMOA recommended retaining the current requirements until the FAA has reviewed all part 135 pilot rest requirements.

PHI and numerous other commenters requested flexibility for pilot rest requirements under circumstances beyond the control of the pilot or operator.

The FAA did not propose any substantive changes to §§ 135.267 and 135.271 flight time and rest requirements but instead added language to those sections to clarify ''flight time'' as a term that includes any helicopter air ambulance operation as defined in § 135.601. 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.

In the final rule, the FAA did not add the proposed references to helicopter air ambulance operations in §§ 135.267 and 135.271 because they are redundant with the amendments to § 135.1. Any operation that must be completed under part 135 must comply with the applicable flight and duty time limitations of part 135, and this action does not eliminate this requirement. As commenters noted, §§ 91.13 and 135.69 provide some safeguards, but the FAA has determined that the flight time limitations and rest requirements of part 135, subpart F, are the rules to follow to prevent pilot fatigue.

The FAA also notes that it received several comments about whether circumstances beyond the control of the certificate holder would permit exceeding the flight time limitations in § 135.267. The FAA believes that these comments mirror those submitted to the FAA in response to a draft legal interpretation published for comment that addresses this issue. *See* Docket No. FAA–2010–1259 (Dec. 23, 2010). The FAA advises commenters that it issued a withdrawal of the referenced interpretation in the same docket on November 7, 2013 (79 FR 66865) and is not taking any action in this rule. To do so would be outside the scope of the rule because the issue presented in the draft legal interpretation is one that was not addressed in the NPRM.

Final Rule

Upon review of the NPRM, the FAA made changes to the rule text in §§ 135.1 and 135.601. The FAA did not adopt the proposed changes to §§ 135.267 and 135.271. The applicability statement in § 135.1 was revised for clarity. In § 135.601, the FAA removed the definition of helicopter air ambulance because it was unnecessary and revised the definitions of helicopter air ambulance operation and medical personnel for clarity. All of these changes are non-substantive.[7]

[7] Section 306(a) of the FAA Modernization and Reform Act of 2012 (Pub. L. 112–95) requires helicopter air ambulance operations to comply with

2. Weather Minimums (§ 135.609—Proposed § 135.607)

Currently, part 135 regulations require visibility of at least ½ statute mile during the day and 1 statute mile at night for VFR helicopter operations at an altitude of 1,200 feet or less above the surface in Class G airspace. In the NPRM, the FAA proposed to add more stringent weather minimums for helicopter air ambulance operations. As stated in the NPRM, this rule codifies the weather requirements of OpSpec A021. *See* Table 4 below. The proposed weather minimums for uncontrolled airspace are determined by whether the helicopter is flying in a mountainous or non-mountainous area and whether, within those classifications, the flight is taking place in a certificate holder's local flying area or is a cross-country flight. The NPRM defined a local flying area as 50 NM in any direction from an operator's base of operation. A cross-country flying area is an area other than a local flying area. Weather minimums are less stringent in local flying areas because of pilots' increased familiarity with obstacles and the operating environment. Based on the NPRM, in all flying areas, helicopter pilots using an FAA-approved night vision imaging system or FAA-approved HTAWS can fly in lower weather minimums during night operations because those systems provide benefits for avoidance of obstacles and controlled flight into terrain avoidance.

TABLE 4—VFR CEILING AND FLIGHT VISIBILITY REQUIREMENTS

Location	Day		Night		Night using an approved NVIS or HTAWS	
	Ceiling	Flight visibility	Ceiling	Flight visibility	Ceiling	Flight visibility
Nonmountainous local flying areas.	800-feet	2 statute miles	1,000-feet	3 statute miles	800-feet	3 statute miles.
Nonmountainous non-local flying areas.	800-feet	3 statute miles	1,000-feet	5 statute miles	1,000-feet	3 statute miles.
Mountainous local flying areas.	800-feet	3 statute miles	1,500-feet	3 statute miles	1,000-feet	3 statute miles.
Mountainous non-local flying areas.	1,000-feet	3 statute miles	1,500-feet	5 statute miles	1,000-feet	5 statute miles.

The FAA received support for this provision from several commenters. The NTSB supports codifying the more stringent weather minimums of OpSpec A021. PHI agrees with the proposal. AAMS expressed support for this provision but opposed the requirement that operators must designate a local flying area, commenting that there are some areas where using cross country weather minimums would be preferable. They recommended replacing the word ''must'' with ''may.'' Similarly, AMOA, Air Evac EMS, and individual members of ACCT commented that a local flying area should be optional and that the FAA should also allow for non-contiguous local flying areas. Safety and Flight Evaluations, International agrees with the proposal to increase the VFR weather minimums, but disagrees with the proposed implementation and commented that there should not be a differentiation between the weather minimums for ''local flying areas'' and ''cross country flying areas'' and that the proposed rule inappropriately decreases the minimums when the aircraft is equipped with an approved night vision imaging system or HTAWS.

Final Rule

The FAA is adopting this provision with several changes. Based on the comments received, the FAA determined that it would be overly restrictive to require operators to designate a local flying area that would not be used. The certificate holder will not be required to designate a local flying area but may do so in order to use the less stringent weather minimums. If an operator does not designate a local flying area, operations must be conducted in accordance with the more restrictive non-local-flying-area minimums in the rule. Thus the change in the rule will not negatively affect safety.

As discussed in the NPRM, a pilot must demonstrate familiarity and detailed knowledge of the hazards and high altitude terrain in local flying areas in order to use the lower minimums. Thus, the final rule includes a requirement that a pilot may not use the local flying area weather minimums unless that pilot has passed an examination given by the certificate holder within the 12 months prior to using the local flying area weather minimums.

Additionally, the final rule will allow non-contiguous local flying areas rather than tying them to the certificate holder's base of operations. This rule does not restrict the number of local flying areas an operator may designate. The intended safety standard will be maintained because before using the less restrictive local flying area weather minimums pilots will demonstrate knowledge of that area. The title of this section has been changed for clarification.

3. IFR Operations at Airports Without Weather Reporting (§ 135.611—Proposed § 135.609)

Current part 135 regulations only permit instrument flight into and out of airports with an on-site weather reporting source. The FAA proposed allowing helicopter air ambulance operators to conduct IFR operations at airports and heliports without a weather reporting facility if they can obtain weather reports from an approved weather reporting facility located within 15 NM of the destination landing area and meet other pilot and equipment requirements.

The NTSB supported the proposal, agreeing that it would ''provide an environment suitable for increased use of IFR,'' and noting that it would partially respond to Safety Recommendation A–06–93 ''because of the potential increase in the availability of IFR approaches for HEMS operators.''

AMOA commented that all part 135 operators should be able to use these procedures. The FAA did not propose permitting all part 135 operators to use these procedures in the NPRM and to

part 135 weather minimums and flight and duty time rules whenever medical personnel are onboard the aircraft.

expand the applicability at this time would not be within the scope of this rule. Accordingly, the FAA is not extending this requirement to all part 135 operators.

Use of an Area Forecast as an Alternate Weather Source

Currently, OpSpec A021 is issued to helicopter air ambulance operators and allows the use of an area forecast as an alternate weather source. The Society of Aviation and Flight Educators noted that the changes to OpSpec A021 were made because the FAA had determined that navigation by instruments is safer than navigation by visual reference. The revisions specifically included area forecasts to facilitate greater use of the instrument flight rules system. Many operators developed an instrument flight rules system that uses those forecasts.

The Society of Aviation and Flight Educators contended that this proposal would require an operator to either add an approved automated weather station at a location within 15 NM or to operate with visual flight rules. This, according to the commenter, would significantly undermine the ability of operators to add instrument operations as a safety improvement. PHI, AMOA, ACCT, MaxViz, and the Health Care District of Palm Beach County all echoed the call for adding the area forecast as an acceptable alternative if a weather reporting station is not available.

The NPRM proposed a higher standard than that required by OpSpec A021. That operations specification permits an operator to use an approved weather reporting source if one is located within 15 NM of the landing area but if there is not such a source within that distance from the landing area, an area forecast may be used.

In response to comments, and upon further review, the FAA has changed the requirements of this rule from those proposed in the NPRM. This final rule allows IFR operations at an airport without weather reporting if the certificate holder has an area forecast for the vicinity of the destination landing from the National Weather Service, a source approved by the NWS, or a source approved by the FAA. As discussed in the NPRM, the FAA finds that an area forecast is sufficient for the purposes of this rule because helicopter air ambulance operators have a history of safely operating under an exemption [8] or under OpSpec A021, on which this rule is based. The area forecast allowance of the exemption and OpSpec A021 is the same as in this final rule language.

Pilot and Equipment Requirements

The FAA also revised the rule language to eliminate several sections that were determined to be redundant with existing part 135 regulations. The redundancies removed were the requirements for pilots to: (1) Have a current § 135.297 instrument proficiency check; (2) hold an instrument rating; (3) complete a course including a review of IFR regulations, interpreting weather, reviewing instrument charts, and crew resource management; (4) learn methods for determining present visibility and ceilings; and (5) be tested on approaches authorized under this provision. In all these cases the FAA finds that pilots who conduct part 135 operations must already meet these standards, or that these standards are sufficiently incorporated into current pilot training requirements.

The FAA also deleted the proposed requirements for aircraft to be equipped with an autopilot if used in lieu of a second in command as required by § 135.101, and for the aircraft to be equipped with navigation equipment appropriate to the approach to be flown. Again, this requirement is redundant with existing §§ 135.101 (SIC) and 135.105 (autopilot), which must be followed during part 135 operations.

In response to a comment from AMOA that the references to ''storm scopes'' were outdated, the FAA deleted the references in proposed § 135.609(b)(2) to ''airborne weather radar'' and ''lightning detection'' as types of severe-weather detection equipment. The final rule requires that helicopters conducting these operations be ''equipped with functioning severe weather-detection equipment.''

Requirements for Departures

The rule requires that the weather at the departure point must be at or above the minimums for visual flight rules for a pilot to make an IFR departure. The pilot in command is authorized to determine whether the weather meets the takeoff requirements of part 97 or of the certificate holder's operation specification.

The FAA concludes that this new provision will increase instrument flight and result in more air ambulance helicopters operating in a positively controlled environment, thereby increasing safety.

4. Approach/Departure IFR Transitions (§ 135.613—Proposed § 135.611)

This rule was proposed to establish weather minimums for helicopter air ambulances that have been using an instrument approach and are now transitioning to visual flight for landing. This section is intended to encourage IFR operations because of their safety benefits. Pilots on an instrument approach would, upon reaching a point in space at a minimum descent altitude or decision altitude, continue the flight to the landing area under visual flight rules if conditions permit. The weather minimums that pilots will follow are based on the type of approach the pilot is flying and the distance between the missed approach point and the heliport or landing area. Pilots continuing on the ''proceed visually'' segment of an instrument approach into an airport or heliport for which the approach is designed would follow the weather minimums on the approach chart when completing that approach.

The FAA notes that in most cases the rule permits flight under less restrictive weather minimums than are currently allowed for cruise flight in uncontrolled airspace. As noted in the NPRM, obstacles in the vicinity of an instrument approach are flight-checked and marked on instrument approach charts. It is less likely that pilots would encounter unexpected obstacles when following an instrument approach chart. However, if the distance of the VFR portion of the flight is 3 NM or more, then the VFR weather minimums for that class of airspace apply. We emphasize that if a 3-NM-or-more VFR segment is flown in Class G airspace, the applicable VFR weather minimums would be those found in § 135.609.

The rule also permits a pilot to depart with a VFR-to-IFR transition under the less restrictive weather minimums allowed for approaches if the pilot follows an FAA-approved obstacle departure procedure, has filed an IFR flight plan and obtains an IFR clearance at a predetermined location, and the transition to IFR occurs no farther than 3 NM from the departure point. Pilots who cannot meet these requirements must use the standard VFR weather minimums required for that class of airspace, which would be those found in § 135.609 for Class G airspace. As noted in the NPRM, a pilot who simply flies the reverse course of the approach used when landing would not be following an FAA-approved obstacle departure procedure. That is because this procedure has not been flight-

[8] Exemptions No. 9490 and 9490B (Regulatory Docket No. FAA–2006–26407); Exemption No. 9665 (Regulatory Docket No. FAA–2008–0169); Exemption No. 6175 (Regulatory Docket No. FAA–2001–9195) (granting authority for departures only); Exemption No. 6175G (Regulatory Docket No. FAA–2001–9195).

checked to specific departure criteria and therefore obstacle clearance cannot be guaranteed.

A total of 21 individuals affiliated with PHI commented on the proposal for this rule. These commenters supported the proposed rule and noted that it is consistent with current OpSpec A021 requirements. Commenters also noted that proposed § 135.611(a)(2) contained an incorrect cross reference to § 135.611(a)(1)(i).

Safety and Flight Evaluations, International stated concerns with the construction of some PinS approaches. First, it noted the complexity in distinguishing between ''proceed visually'' and ''proceed VFR,'' because the weather minimums on the approach charts apply to ''proceed visually'' segments, while the distance from the missed approach point to the landing area dictates the weather minimums. It stated that having various minimums was complex and would not encourage IFR operations. Next, it noted the possibility that a pilot could reach the missed approach point, determine that the weather meets the requirements to proceed VFR, and then lose sight of the landing area. This would leave the pilot unable to continue IFR because the pilot would no longer be in protected airspace. Finally, Safety and Flight Evaluations, International commented that ICAO has established clearer requirements for similar operations and asked whether the proposed requirements comply with ICAO Procedures for Air Navigation Services—Aircraft Operations (PANS–OPS) definitions which limits the proceed VFR PinS procedure to no more than 3 kilometers.

As a result of this comment, the FAA revised the rule language for clarification. During preflight planning, pilots will be able to identify the type of approach to be flown, the distance to the destination from the missed approach point and determine the applicable weather minimums for the VFR segment of the flight. This section does not apply to ''proceed visually'' segments of instrument approaches, which are the final segments (minimum descent altitude or decision height) of instrument approaches prior to landing. VFR flight rules do not apply to ''proceed visually'' segments. Instead, the weather minimums for ''proceed visually'' segments are found on the approach chart. This section applies to the ''proceed VFR'' segments of PinS approaches and VFR maneuvering after transitioning to VFR from an IFR approach.

The FAA has reviewed the ICAO PANS–OPS requirements and concludes that the ICAO operational requirements are not significantly different from this rule. In both cases, once the pilot concludes the IFR portion of the flight, the pilot is no longer under air traffic control and is operating under VFR. Further, the ICAO PANS–OPS paragraph 4.1.2.2 contemplates that member States may establish minimum visibility for PinS Proceed VFR procedures. We note that this rule does not address instrument approach design standards. These are what dictate the length of a segment between a missed approach point and a landing area. The FAA expects that pilots who transition to VFR and then encounter weather below VFR minimums would execute a missed approach procedure, a standard procedure followed when an instrument approach cannot be completed, if available, or follow appropriate emergency procedures.

The title of § 135.613 has been changed so that it more accurately reflects its subject. Additionally, the section has been reorganized for clarification.

5. VFR Flight Planning (§ 135.615—Proposed § 135.613)

In the NPRM, the FAA proposed to require helicopter air ambulance pilots conducting operations under VFR to perform preflight planning to determine the minimum safe altitude along the planned route.[9] This proposal would codify a provision in OpSpec A021.

As proposed, the rule requires helicopter air ambulance pilots conducting VFR operations to evaluate, document, and plan to clear terrain and obstacles by no less than 300 feet for day operations, and 500 feet at night. With this minimum safe cruise altitude established, the pilot must then use it to determine the minimum required ceiling and visibility for the flight. If the weather minimum will not permit visual flight at the minimum safe cruise altitude, the pilot must conduct the flight under IFR or not fly at all. The proposed rule allowed for deviations from the planned flight path if conditions or operational considerations make it necessary. If deviating, however, the pilot must still observe the weather or terrain/obstruction clearance requirements. This rule is intended to prevent obstacle collisions by requiring pilots to be aware of the terrain and highest obstacles along a planned route.

The FAA received 79 comments on the proposal for VFR flight planning, including comments from several individuals affiliated with ACCT, Air Evac EMS, PHI, and REACH. Sixty-nine commenters, including ACCT, AMOA, PHI, Air Evac EMS, Angel One Transport, and REACH, agreed with the proposed language.

NEMSPA strongly opposed the ''highest obstacle determination'' of the proposed rule, commenting that this requirement would have dangerous unintended consequences since pilots with launch time requirements would have up to 40 percent of their available preflight time taken up by a superfluous task, resulting in the likelihood that some critical items will not be accomplished. This commenter further asserted that the highest obstacle requirement should only apply when flying outside of the local flying area in a helicopter not equipped with a night vision imaging system or HTAWS, when the reported or forecasted weather conditions are less than 5 statute miles visibility and/or the ceiling is less than 3,000 feet above ground level or above the highest obstacle on the course.

Although agreeing with this proposal, several commenters, including AMOA, Air Evac EMS, and individual members of ACCT, recommended applying it to all part 135 operators. The NTSB agreed with the intent of the requirement, but believes a number of issues should be clarified. It commented that the FAA should provide guidance for minimum route width requirements for obstacle and terrain clearance evaluation, because aircraft may deviate from the planned course centerline. Several commenters also noted that requiring that obstacles be cleared vertically is not practical when some obstacles can be cleared by flying around them and recommended adding a corresponding route width to the visibility minimum. The NTSB also requested that the FAA clarify whether route evaluations must be performed before each flight or if an approval of a flight path can be performed on a less frequent basis for frequently flown routes.

The FAA has determined that establishing a minimum route width would have an overly burdensome effect on helicopter air ambulance operations and pose operational difficulties for pilots who fly in mountainous or urban environments. A minimum route width would require pilots to fly at an altitude sufficient to clear the obstacles within the designated route width. As an example, a 3-mile route width requirement could force a pilot who safely flies under visual flight rules in a valley to operate at an altitude above

[9] Section 306(a) of the FAA Modernization and Reform Act of 2012 (Pub. L. 112–95) requires the FAA to conduct rulemaking on helicopter air ambulance operations to address ''flight request and dispatch procedures.'' Though the benefits are less than costs for this provision, it satisfies the Congressional mandate as required by the Act.

the highest peak because the mountains on each side would be included in the route width. This could easily place a visual flight operator into instrument flight conditions. The FAA recognizes that helicopter air ambulance operations can be safely conducted under VFR, and therefore has chosen not to impose this limitation. Operators would need to evaluate the route prior to each VFR operation.

This requirement is intended to prevent obstacle collisions by ensuring that pilots know the minimum safe altitude that would permit clearance for all obstacles along the route. Therefore, the FAA considers that VFR flight planning is not a superfluous task for pilots with launch time requirements, but rather an important safety requirement. Additionally, the FAA concludes that all helicopter air ambulance operations flights conducted under VFR will benefit from this safety requirement, and does not intend to restrict this requirement to flights outside of the local flying or flights without a night vision imaging system or HTAWS.

This rule requires a pilot to perform preflight planning from takeoff to landing for each flight conducted under VFR. This rule does not permit a pilot to conduct preflight planning on a less frequent basis for frequently flown routes. The purpose of flight planning before each flight is to ensure that the information used is current, as conditions and obstacles may change between each flight. However, the FAA notes that if a route is flown routinely, the amount of time required to do the preflight planning may be reduced. As noted in the NPRM, a helicopter air ambulance mission may include more than one leg. The flight plan may be completed for the whole mission prior to the first leg, but each subsequent leg of the mission must be reconsidered before takeoff and amended as appropriate.

The FAA will not apply this requirement to all commercial helicopter operations because it is not within the scope of the rulemaking.

This requirement is adopted as proposed with minor edits for clarification.

6. Pre-Flight Risk Analysis (§ 135.617—Proposed § 135.615)

The FAA proposed establishing a requirement for helicopter air ambulance operators to conduct a preflight risk analysis. The risk analysis would focus on such variables as the characteristics of the planned flight path, flight crewmember ability to safely conduct the operation, weather, and whether the flight has been rejected by another operator. The purpose of this exercise is to give certificate holders a way to assess risk and determine whether any risks can be mitigated so that the flight can be conducted safely.

A total of 83 commenters, including Air Methods, Advanced Life Support and Emergency Response Team (A.L.E.R.T.), Med-Trans Corporation (Med-Trans), NEMSPA, the NTSB, REACH, and Staff for Life commented on this section. Several of those commenters, including ACCT, MedCenter, MedServ International, LLC (MedServe), NEMSPA, and NTSB agreed with the proposal.

Operational Considerations

The NTSB noted that this rule should not be a substitute for the safety benefits that would be provided by an OCC. Other commenters, including HAI, Med-Trans, and REACH, thought that the proposed requirement might duplicate the requirements for an OCC or safety management program. A.L.E.R.T. said that documenting risk assessments for every flight would be counterproductive and would delay responses without improving safety and that it performs a risk assessment for every shift—not every flight. Staff for Life said that the risk assessment is not necessary because it has never done anything to save lives and pilots are constantly assessing the risks during preflight, flight, and post-flight.

The FAA disagrees that a pilot's in-flight assessment of risks is a sufficient substitute for the preflight risk assessment. Rather, they are complementary. The purpose of assessing risk before an operation is to be able to mitigate those risks before the operation, thereby preventing a pilot from encountering an unmanageable situation while in the air. It is of course possible that a pilot will encounter risks while conducting the helicopter air ambulance operation despite having performed a preflight risk assessment, and it is then that the pilot's skills will be used to mitigate those risks. As discussed in the NPRM, the FAA and the NTSB have 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.'' [10]

This rule requires the pilot in command to conduct a preflight risk analysis before the first leg of a helicopter air ambulance operation. As discussed in the NPRM, it would be completed before departure on the first leg, but take into account factors that may be encountered during the entire operation. The FAA acknowledges that certain parts of a preflight risk analysis can be accomplished at the beginning of a shift. However, time-sensitive components of a preflight risk analysis, such as crew fatigue, weather, required fuel, and route-specific information, should be conducted as close to the flight launch as possible. A blanket analysis at the beginning of each shift may not provide an accurate risk assessment.

The FAA acknowledges that the pre-flight risk analysis will be an additional requirement that must be performed before beginning a helicopter air ambulance operation and certificate holders may not be able to launch a flight as quickly as before. The initial regulatory evaluation estimated that the preflight risk analysis would take 10 minutes to complete. The FAA has determined that a 10-minute delay is acceptable because of the safety benefit of identifying risks before flight.

The FAA also understands that there will be overlap between this requirement and the OCC requirement for certificate holders with 10 or more helicopter air ambulances. Under that requirement, both the operations control specialist and the pilot in command will be required to complete and approve the risk analysis worksheet. This overlap is intended to provide larger operations with an additional measure of review over the flight's risk analysis.

Content of the Pre-Flight Risk Analysis

Thirty-five commenters, including Air Methods and REACH, did not agree with the proposal to require certificate holders to establish a procedure to determine whether another operator has refused or rejected a flight, saying that such a procedure would be too haphazard and unreliable to serve as a regulatory requirement. AMOA said the provision is unfair and unrealistic without a companion requirement for operators to report a flight rejection. PHI, like AMOA, believes reporting of flight rejections by other operators cannot be done uniformly unless the other operators are required to report that information.

The FAA has communicated with State EMS medical directors, advising them of the problem of helicopter shopping. We will continue this outreach to emphasize the importance of obtaining the reasons for flight refusal by helicopter air ambulance operators.

[10] NTSB, *Special Investigation Report on Emergency Medical Services Operations* (NTSB/SIR–06/01) 4 (Jan. 25, 2006).

We will also work with emergency dispatchers and certificate holders in sharing this information.

Two commenters, including the Society of Aviation and Flight Educators, agreed with the requirement to obtain concurrence on the preflight risk analysis from someone other than the flightcrew during marginal weather. Air Methods said the requirement for managerial approval of the preflight risk analysis when flight risk exceeds a predetermined level is unfeasible. PHI said it has its own risk assessment, which requires operational control management approval for flight requests above a preset risk matrix level.

PHI requested eliminating the requirement for the pilot's signature on the risk assessment before takeoff. Another commenter asked whether an electronic signature would be sufficient.

The rule requires operators to establish and document, and include in their FAA-approved preflight risk analysis, a procedure for determining ''whether another helicopter air ambulance operator has refused or rejected a flight request.'' The FAA understands the commenters' concerns regarding the ability to obtain information about flight refusals and rejections from other operators. To clarify, it is not the intent of this rule to require a definitive declaration on the preflight risk assessment as to whether the flight has been refused or rejected by another operator. Rather, it would be acceptable for a certificate holder that is called for a flight to ask the dispatcher offering the flight if another operator has turned it down. If the person offering the flight (emergency dispatcher, 911 operator, etc.) does not know or cannot give the reason why the flight was turned down, the certificate holder need only make note of that in the preflight risk analysis and factor in that information as deemed appropriate. Compliance with this rule does not require certificate holders to call other operators to ask if the flight was refused or rejected or to inform other operators that they have refused or rejected a flight. A flight would not be presumed high risk just because there was no definitive response from an emergency dispatcher about whether the flight was refused or rejected by another operator. An operator following this procedure will have fulfilled its duty with respect to the rule.

The FAA has determined that although the flight refusal or rejection information need not be definitive, it can yield useful information about the potential risk of a flight. Additionally, the FAA believes that this requirement will encourage certificate holders to tell dispatchers why a flight is refused or rejected to provide valuable safety information to other operators. It may also encourage emergency dispatchers to develop procedures for obtaining this information.

In the final rule, the FAA did not change the requirement for management approval of flights in situations where a predetermined risk level is exceeded. The FAA has determined that management input provides an important second opinion on whether to conduct a flight if the risk is not clear cut. The FAA reiterates that management involvement must not be used to pressure pilots into conducting a flight that the pilot has determined to be unsafe. Likewise, the FAA emphasizes that the rule permits certificate holders leeway to develop preflight risk assessment procedures that work for them within the parameters set by the rule. Operators like PHI, which have established procedures, may comply with this requirement by incorporating their existing procedures into the mandated risk assessment.

Regarding whether an electronic signature on the preflight risk assessment would be accepted, the final rule does not specify the method by which a pilot must sign a preflight risk assessment. The purpose of the risk analysis requirement is to ensure that pilots examine the risks associated with an operation and get information to mitigate those risks. The signature is important because it is the pilot's verification that the information in the risk analysis is accurate and complete. Therefore, an electronic signature would be acceptable. FAA guidance on electronic signatures is found in Advisory Circular (AC) 120–78 (October 29, 2002).

Other Comments

A few commenters, including Metro Aviation and REACH, stated that the proposal for the risk assessment was unclear and left significant room for interpretation and inconsistent or uneven enforcement. Many commenters asked that the FAA revise its previous guidance on risk assessment to more adequately reflect current industry best practices and provide more consistency to the risk assessment and mitigation process.

Some commenters asked the FAA to develop and improve the preflight risk analysis worksheets so they can be more meaningful and useful to pilots, crews, and operations center personnel. Four commenters, including Air Methods, Metro Aviation, and AMOA, asked that the requirement for FAA approval of the risk analysis procedures be deleted. An individual commented that the requirement to retain the records of the risk analysis for 90 days is inconsistent with the load manifest and flight log data retention requirements.

This requirement is based on FAA Notice 8000.301, *Operational Risk Assessment Programs for Helicopter Emergency Medical Services,* which, in part, provides practical examples of preflight risk assessments. The FAA has determined that these examples, along with this rule, provide adequate direction to certificate holders for implementation of this rule. The FAA will provide guidance to inspectors on how to enforce this rule. Nevertheless, the rule has been designed to allow flexibility so that certificate holders can develop procedures appropriate for their operations.

Finally, the FAA is not modifying the 90-day data retention requirement. The 90-day retention will allow the operator to conduct a quarterly review to identify trends in its operations to further mitigate risks in future flights. This requirement is adopted as proposed.[11]

7. Operations Control Centers (OCCs) (§§ 135.619, 120.105, and 120.215)

The proposal included a new requirement that certificate holders with 10 or more helicopter air ambulances establish OCCs staffed with operations control specialists. These specialists would take part in preflight risk analysis required by § 135.617, maintain two-way communications with pilots, give pilots weather information, and monitor the progress of the flight. They would ensure that the pilot has completed the preflight risk analysis worksheet, confirm and verify the entries on the worksheet, and work with the pilot to mitigate any identified risk. The specialist would also sign the risk assessment worksheet along with the pilot. Certificate holders would be required to train and provide enough staff for their OCCs to make sure these services could be provided.

Applicability of the Rule

A number of commenters (including AMOA, NTSB, LifeFlight of Maine, AAMS, Air Evac EMS, NEMSPA, PHI, and ACCT) addressed the proposed requirement for certificate holders with 10 or more helicopter air ambulances to have an OCC.

[11] Section 306(d)(1) of the FAA Modernization and Reform Act of 2012 (Pub. L. 112–95) requires the FAA to conduct a rulemaking that provides for a flight risk evaluation program in helicopter air ambulance operations. Additionally, section 306(c)(1) requires the rule to address flight request and dispatch procedures.

These commenters objected to applying this requirement only to operators with 10 or more helicopter air ambulances. One commenter said that fleet size has no bearing on the stated risks a pilot faces. AMOA, Air Evac EMS, ACCT, and PHI called the distinction ''arbitrary and subjective'' and said this distinction does not recognize the complexity of operating less than 10 helicopter air ambulances that are geographically separated. All of these commenters suggested that if there are clear benefits to the use of an OCC, then the requirements should be applicable to all.

The NTSB commented that if operators with less than 10 helicopters are not included in this requirement, then they ''will transport approximately 100,000 patients or more per year without the added safety benefit of an OCC.'' Commenters explained that while the requirement should apply to all operators, it should be scalable for those with less than 10 helicopters. Comments referenced AC 120–96, which provides guidance for setting up OCCs for four levels of operators based on size.

LifeFlight of Maine commented that all air ambulances (both rotor and fixed wing) should have an OCC and that while 24 large certificate holders operate 70 percent of the aircraft in the industry (as stated in the NPRM), operators with less than 10 aircraft, who make up 68 percent of the certificate holders, are not immune to accidents and need the extra layer of protection given by an OCC.

AAMS recommended allowing smaller operators to subcontract OCC services from larger providers or private vendors for certain flight tracking and communication services, while maintaining ultimate operational control of the flight. Med-Trans and REACH asked for the ability to contract for certain functions of an OCC with another OCC. REACH commented that contracting would allow more operators to take advantage of the many safety benefits of an OCC but also share the cost. It noted that each operator would retain management authority and operational control responsibility.

Med-Trans and REACH also suggested an alternate way of applying the OCC requirements. They said that ''[s]everal companies currently operate aircraft on several different certificates but only utilize one [OCC]. Several air medical operators operate air ambulances on multiple certificates. Operations control center functions can be conducted without imposing a requirement for an [OCC] for each certificate.'' They stated that the rule must allow air medical operators to combine OCC functions for multiple certificate holders that are under the same management. They said that this will achieve the benefits of an OCC without the additional cost. They also noted that this change would prevent companies from establishing multiple certificates with 9 or fewer helicopters on each to avoid the OCC requirement.

Angel One Transport, a hospital-based pediatric critical care transport in Little Rock, Arkansas, commented that the proposed exclusion of fixed-wing air ambulances and air ambulance operators with less than 9 helicopters creates an ''at risk'' group in the air medical industry. Angel One Transport said that ''as a small operator, our program has many of the same characteristics of an OCC established in our program's operations though we do not meet the stated letter of the law in the NPRM.'' Angel One Transport asked the FAA to consider adding language that allows smaller operators to have the ''functional capabilities'' of an operations control center, noting that ''the functions of an OCC are invaluable but the financial obligations for a small operator to comply with such requirements are cost prohibitive.''

Another small operator, A.L.E.R.T. in Kalispell, Montana, operates with only one helicopter. The commenter stated that the requirement for OCCs is a good idea, but that it should be based on the number of aircraft and not the number of dispatches or flights. It further asserted that ''an operational control center would be very costly, which could easily be absorbed by a larger operation but prohibitive to a small one and not necessary.''

NEMSPA said that ''for smaller operations with a dispatch or communications center, placing personnel in that facility who meet the requirements for an operational control specialist should satisfy the requirements for the facility to be an operational control center.''

LifeFlight of Maine supported extending the OCC requirements to all operators of an air ambulance, including rotor or fixed wing, to have an OCC regardless of size. Only one commenter, AAMS, suggested that this compliance requirement should be based on number of hours flown and geographical area covered rather than number of helicopters.

It is possible that a small operator with only one or two helicopters could reach a set hourly limit, but would not have the same level of operational complexity as a certificate holder flying the same number of hours but with 10 or more helicopters. Nevertheless, the FAA is requiring an OCC only for certificate holders with 10 or more helicopter air ambulances, as proposed. As discussed in the NPRM, these larger certificate holders will gain the most benefit from an OCC because their operations are more complex. This requirement will cover approximately 83 percent of the U.S. helicopter air ambulance fleet.

The FAA specifically asked for comments on whether the applicability of this requirement should be based on the number of operations or hours flown by each aircraft, rather than fleet size. After evaluating the comments, the FAA has concluded that fleet size is the best method for determining whether the OCC requirement would apply. The fleet size requirement is easily observed and evaluated by industry and the FAA. Additionally, the FAA does not have data that would allow us to determine how many hours or number of operations would constitute a complex operation, nor has the FAA received such information during the comment period.

The FAA acknowledges that one company may hold several certificates for helicopter air ambulance operations. In these circumstances, each certificate would be evaluated independently rather than in the aggregate. Provided that each certificate holder has fewer than 10 helicopters used for air ambulances in its fleet, then no OCC would be required.

Other OCC Comments

PHI noted that OCCs were originally an invention of air medical operators to more effectively manage operations control. PHI said its Enhanced Operations Control Center has become a critical component in the company's safety and risk management process as well as the OCC within the company. PHI, however, along with AMOA, Air Evac EMS, and ACCT, does not believe the requirement as proposed is consistent with the highest industry standards. These commenters also believe that the OCC requirements are too much like those for part 121 air traffic control and dispatch functions and are not compatible with part 135 on-demand operations. They suggested delaying implementation of the rule until a minimum operating standard based on industry best practices could be developed. They recommend the FAA conduct an additional study of existing OCCs.

LifeFlight of Maine commented that AC 120–96 is inadequate for principal operations inspectors and recommended additional guidance in line with industry best practices. The National

Association of Air Medical Communications Specialists (NAACS) sought clarification on the meaning of ''formalized dispatch'' and ''enhanced operational procedures.''

As noted in the NPRM, the duties and training requirements of operations control specialists are based on AC 120–96, *Integration of Operations Control Centers into Helicopter Emergency Medical Services Operations* (May 2008), which provides recommendations to assist helicopter air ambulance operators with the development and implementation of an OCC. Also as noted, AAMS, HAI, and AMOA commented to the NTSB that the AC is a ''product of a survey of best practices in the air medical industry and gives guidance to other air medical services as to the benefits of this type of operation.'' [12] These requirements found in the AC and in the rule are intentionally similar to part 121, but as noted in the AC, helicopter air ambulance operations are unique and therefore the FAA did not adopt the full part 121 aircraft dispatch requirements. We also note that the standard adopted in this rule is a baseline that can be augmented by an operator.

Operations Control Specialists

One commenter said that the FAA should require a dispatch center staffed with part 121 certificated dispatchers. This commenter said that the FAA should certify dispatchers, and those dispatchers should plan and evaluate the entire flight before contacting the pilot and then monitor the flight's progress to destination.

The NTSB also supported FAA certification of operations control specialists and commented that such a requirement will ensure that the FAA has oversight over training, testing, and certification, and will provide quality control. By requiring operations control specialists with standard certification, NTSB asserts that this may facilitate development of OCCs that will be able to subcontract their services to smaller HEMS entities.

NEMSPA recommended a standard for operations control specialist training set by the industry and approved by the FAA before any requirement is put in place. Med-Trans, REACH, Air Evac EMS, AMOA, California Shock Trauma Air Rescue (CALSTAR), Omniflight Helicopters, Inc. (Omniflight), and Intermountain Life Flight do not believe that operations control specialists should be required to obtain certification in order to do their work. However, one individual questioned why a certified dispatcher is not qualified to act in an operations control position but a graduate of a company-sponsored program is.

The FAA received comments stating that the operations control specialist training proposed in the NPRM too closely follows the training program for part 121 dispatchers. The FAA acknowledges that the requirements of this rule were based on part 121 dispatcher training rules. The topics selected for training, however, were derived from FAA AC 120–96, which provides a recommended training curriculum for communications specialists. The certificate holder may contract for operations control specialist training or testing in accordance with § 135.324. The certificate holder may use a part 142 training center or another certificate holder for operations control specialist training and testing.

Commenters also asked for a clearer distinction between the operations control specialists required by this rule and ''CommSpecs,'' the communication specialists currently employed in the air ambulance industry. NAACS asked whether the aviation base curriculum for operations control specialists would enhance safety benefits beyond the current ''Certified Flight Communicator'' program offered by NAACS. In response to this question, the FAA notes that the areas of required training for an operations control specialist, derived from AC 120–96, are specified in the rule. Compliance with this rule will enhance safety because the training will be required and standardized for all operations control specialists. The FAA does not believe that a distinction between operations control specialists and CommSpecs is necessary. This rule requires that an OCC be staffed by an operations control specialist at all times while helicopter air ambulance flights are being conducted. The number of persons functioning in this capacity is not mandated, but there must be a sufficient number of them to ensure operational control of each flight. An operator may also staff an OCC with CommSpecs, but these persons are not mandated and they may not perform the functions of an operations control specialist as listed in § 135.619(a)(1)–(4) unless they satisfy the qualification and training requirements of an operation controls specialist.

Thirty-four commenters, including Air Evac EMS, Intermountain, Med-Trans, Metro Aviation, Inc. (Metro Aviation), National Air Transportation Association (NATA) and REACH, objected to the proposed 10-hour duty time limitation for operations control specialists. They commented that this operations control specialist work shift limit reflects regulations applied to part 121 dispatchers and does not reflect any best practice or proven standard in the air medical community. Air ambulance pilots, although only permitted to fly 8 hours, work a 12-hour shift. These commenters, including AMOA, PHI, Air Evac EMS, and ACCT, described situations where the differences in shift hours could interfere with completion of a mission. PHI believes that requiring a duty day for these specialists that is less than that required of pilots is both arbitrary and unnecessary. PHI said that the operations control specialist requirement for a 10-hour workday effectively adds an additional full-time employee to the OCC and significant costs to the operator without a demonstrated benefit. REACH remarked that it is unclear why OCC personnel should be more limited in their duty time than flight or medical crews.

After reviewing these comments, the FAA has determined that the proposed operations control specialist duty time is appropriate. The FAA acknowledges that these standards may be different than what some communications specialists may currently be practicing. However, as discussed in the NPRM, the operations control specialist duty time limitation is based on the duty time requirements for part 121 aircraft dispatchers. The FAA has determined that, based on the similarities of these positions, it is appropriate to use the same duty time limitation. Finally, although pilots may have a longer duty period than operations control specialists under this rule, the flight time limitations placed on pilots within their duty periods (or subsequent rest requirements) limits the pilot's exposure to risk.

In conjunction with the proposal for OCCs, the FAA proposed revising §§ 120.105 and 120.215 to add operations control specialists to the list of persons who must be tested for drugs and alcohol. Eleven commenters, including Air Methods, Metro Aviation, and several individuals affiliated with REACH, argued that operations control specialists should be exempt from part 120 drug and alcohol testing.

Operations control specialists will be performing safety-sensitive functions such as providing preflight weather assessment, assisting with fuel planning and alternate airport weather minimums, and communicating with pilots about operational concerns during flight. These duties are similar to those

[12] Statement from the Association of Air Medical Services, Helicopter Association International, and Air Medical Operators Association to the NTSB 14 (Jan. 13, 2009), available at *http://www.ntsb.gov/Dockets/Aviation/DCA09SH001/default.htm.*

of an aircraft dispatcher, and thus operations control specialists would be subject to the same restrictions on drug and alcohol use, and to a certificate holder's drug and alcohol testing program, as described in 14 CFR part 120.

An operations control specialist who failed a drug test, functioned as an operations control specialist without completing training or passing examinations, or verified false entries on a preflight analysis worksheet, could be subject to enforcement action or civil penalties.[13]

The FAA's reference to ''formalized dispatch'' in the NPRM refers to an established consistent process that certificate holders will use when dispatching a flight. The term ''enhanced operational control'' involves more people than only the pilot in the flight release process. For example, it may include the pilot and an operational control specialist, the chief pilot, or the director of flight operations.

Section 135.619 is adopted as proposed. The wording has been modified to ensure clarity.[14]

8. Briefing of Medical Personnel (§§ 135.117 and 135.621—Proposed § 135.619)

In the NPRM, the FAA proposed to require that medical personnel on board a helicopter air ambulance flight receive a supplemental preflight safety briefing with information specific to helicopter air ambulance flights.[15] This information would be in addition to the passenger briefing currently required by § 135.117. As an alternative to the proposed preflight safety briefing, certificate holders would be permitted to provide training every 2 years to medical personnel through an FAA-approved training program.

The NTSB, A.L.E.R.T., LifeFlight of Maine, AAMS, and Angel One Transport supported the requirement. LifeFlight of Maine noted that continual educational opportunities for medical personnel will further enhance situational awareness and promote operational safety.

AAMS, while supporting this proposal, suggested that the FAA work with industry to develop standardized briefing criteria and procedures in order to avoid confusion and inconsistent enforcement of this provision. Several commenters also suggested that accommodations should be made to permit briefings that are not as extensive as those proposed for the rare instances when medical personnel not associated with air medical operations are transported.

Several commenters, including the NTSB, NEMSPA, and the Society of Aviation and Flight Educators, suggested that medical personnel safety training be conducted on an annual basis because much of their knowledge will degrade over time. A.L.E.R.T. made a similar suggestion, noting that it conducts training when it hires new personnel and annually after. AMOA, PHI, NEMSPA, the Health Care District of Palm Beach County and Air Evac EMS recommended that the FAA develop a standard and an approval process for a medical crew training program. Several commenters suggested that the medical personnel training program should be consistent with the Air Medical Resource Management (AMRM) program supported by FAA and industry. AMOA, PHI and Air Evac EMS also commented that it is unnecessary to require medical personnel training record retention for an additional 60 days beyond the 24 months.

AMOA, PHI, and Air Evac EMS expressed several concerns with this provision. They commented that a lack of formal guidance would lead to misunderstanding of the requirements along with inconsistent application and enforcement.

The FAA finds that medical personnel on helicopter air ambulance flights will benefit from an increased familiarity with the helicopter and emergency procedures due to their unique role of providing patient care while simultaneously working around an operating helicopter. The preflight briefing and training is intended to prevent medical personnel from inadvertently introducing risk to the operation when outfitting the passenger compartment for the purpose of providing medical treatment and when providing medical care to a patient.

The FAA notes that medical personnel preflight briefing and training is distinct from AMRM training. The AMRM program is not a preflight safety briefing, but rather a tool used by operators to improve communication and teambuilding skills among its employees during air medical operations. While the FAA supports the use of the AMRM program, it is a distinct program and unrelated to the medical personnel preflight safety briefing/training proposed in the NPRM and adopted in the rule.

As proposed in the NPRM and contained in the final rule, this provision requires a briefing for medical personnel on the physiological aspects of flight, patient loading and unloading, safety in and around the helicopter, in-flight emergency procedures, emergency landing procedures, emergency evacuation procedures, efficient and safe communications with the pilot, and operational differences between day and night operation. The FAA concludes that these requirements will provide certificate holders with sufficient guidance on how to conduct briefings, which will lead to consistent application and enforcement of this provision. Additionally, as proposed in the NPRM and contained in the final rule, this provision mandates that any certificate holder that chooses to conduct a medical personnel training program in lieu of preflight briefings must have an FAA-approved training program in place. This will also ensure consistency in application and enforcement of this provision.

The FAA will not provide exceptions or accommodations to permit briefings that are not as extensive as those proposed for the rare instances when medical personnel not associated with air medical operations are transported. All medical personnel onboard a helicopter air ambulance flight who have not received the optional training provided for by this rule must receive the preflight safety briefing. Medical personnel not associated with that particular operation may still inadvertently introduce risk to the operation when on board the flight. The preflight safety briefing will provide these medical personnel with familiarity with the helicopter and emergency procedures, thus reducing the risk that those personnel will affect the overall safety of the operation. If medical personnel are not being transported during a ''helicopter air ambulance operation'' as defined in § 135.601, the operator would only need to provide the standard part 135 passenger briefing as found in § 135.117.

The FAA has determined that medical personnel safety training will be conducted every 24 months. The NPRM proposed training every 24 months, and although commenters suggested that training occur on an annual basis, the FAA has determined that the required 4

[13] *See* §§ 13.14 (Civil Penalties: General); 13.16 (Civil Penalties); 120.33 (Use of Prohibited Drugs); 120.37 (Misuse of Alcohol).

[14] Section 306(d)(2) of the FAA Modernization and Reform Act of 2012 (Pub. L. 112–95) requires the FAA to conduct a rulemaking that requires operations control centers for helicopter air ambulance services with 10 or more helicopters. Additionally, section 306(c)(1) requires the rule to address flight request and dispatch procedures.

[15] Section 306(a) of the FAA Modernization and Reform Act of 2012 (Pub. L. 112–95) requires the FAA to conduct rulemaking on helicopter air ambulance operations to address ''flight request and dispatch procedures.'' Though the benefits are less than costs for this provision, it satisfies the Congressional mandate as required by the Act.

hours of ground training and 4 hours of training in and around the air ambulance helicopter every 24 months will provide a sufficient amount of familiarity with the aircraft and emergency procedures.

Final Rule

Based on the comments received, the FAA is adopting the rule as proposed with changes. The FAA concludes that requiring medical personnel training record retention for an additional 60 days beyond the 24 months is unnecessary and has amended the final rule to require that records be maintained for only 24 months following the individual's completion of training. If an incident occurs near the end of the retention period, the FAA expects that these relevant documents will be retained per NTSB regulation 49 CFR § 380.10(d). Additionally, we removed redundant briefing topics in § 135.621 based on existing briefing requirements of § 135.117.

9. Helicopter Terrain Awareness and Warning Systems (HTAWS) (§ 135.605)

The FAA proposed a requirement for equipping helicopter air ambulances with HTAWS. There is no existing requirement for this equipment. One commenter stated that installation of HTAWS has been ''the single most effective technology for reducing helicopter mishaps'' among U.S. military helicopters. The NTSB concurred with the proposal and noted that it would meet Safety Recommendation A–06–15. However, commenters also raised concerns over the effectiveness of HTAWS, the need for flexibility, and the cost of the rule.

A number of commenters, including NEMSPA, questioned why the FAA would propose mandating HTAWS, saying that its technology has not been proven in helicopters. Commenters assert that terrain awareness and warning systems (TAWS), the predecessor to HTAWS technology, has only been truly tested with airplanes operating in the high altitude instrument flight rules environment and that there is no evidence to show that HTAWS is effective in low-level visual flight operations. Other commenters said that this equipment is more effective in mountainous areas than in less challenging terrain, is a ''distraction in the cockpit,'' ''doesn't give the pilot the ability to see and avoid weather,'' and ''doesn't keep you from spatial disorientation.'' A number of commenters said that requiring operators to invest in this technology today might preclude them from acquiring more effective technology as it becomes available in the future.

EADS Cassidian Electronics stated that air ambulance operators are the most prominent part of the flying community for which HTAWS can assist in preventing controlled flight into terrain and obstacle strike accidents, but the FAA should be clear about the limitations of current HTAWS systems caused by the reliance on databases. It stated that the vertical accuracy of the ground altitude of a database is approximately 60 feet, which does not include objects like trees, ''which seems to be insufficient for take-off and landing.'' Databases, according to the commenter, only include a fraction of man-made obstacles, such as power lines, antenna masts, and wind turbines which are not included in the database in real time. To resolve these problems, the commenter stated that the best solution would be to require equipment with a real-time forward-looking sensor system that would issue warnings for every obstacle in the flight.

AAMS commented that HTAWS and night vision goggles (NVGs) should be required together as each provides benefits that complement the other. LifeFlight of Maine commented that HTAWS and NVGs should be a minimum standard for night operations. Max-Viz Inc. (Max-Viz) and several individuals commented that NVGs provide better protection from controlled flight into terrain than HTAWS. Additionally, one individual recommended requiring an autopilot rather than HTAWS because it is less expensive and more effective. Several members of ACCT also stated that autopilots are more effective than HTAWS. They claimed that HTAWS only provides a warning to a pilot of an impending collision or altitude loss, but the pilot's corrective actions with the flight controls prevent controlled flight into terrain. They stated that an autopilot would decrease the risk of controlled flight into terrain and accidents from IIMC by holding the aircraft flight path steady and reducing a pilot's susceptibility to spatial disorientation during IIMC recovery maneuvers. The reasons that the FAA did not adopt NVG or autopilot requirements in this rule are addressed in the discussion of pilot instrument ratings, § 135.603, below.

The FAA disagrees with comments that HTAWS is not proven technology as it relates to helicopters and that it would not be effective in preventing controlled-flight-into-terrain accidents. RTCA/DO–309 Minimum Operational Performance Standards for HTAWS and Airborne Equipment TSO–C194 set the standards for HTAWS. The FAA and manufacturers have installed, evaluated and certified HTAWS in helicopters and the systems have been shown to perform their intended function as designed in low altitude environments.

The FAA concludes that the use of HTAWS would create a safer environment for emergency medical services flight operations by preventing controlled flight into terrain at night or during bad weather. As noted in the NPRM, the NTSB cites 17 accidents in its Special Investigation Report on Emergency Medical Services Operations (Jan. 25, 2006) [16] that may have been prevented if the helicopters had been equipped with TAWS. The FAA maintains that HTAWS will make helicopter air ambulance pilots more aware of surrounding terrain and obstacles and keep them from collisions. It may prevent the accidents that happen when a pilot must take sudden and quick action to avoid a collision and then loses control of the helicopter.

The FAA acknowledges that there may be lags between the time when new obstacles are erected and the time when they are put into an HTAWS database. However, the FAA has determined that the VFR flight planning and the VFR altitude requirements adopted here will help to offset such a lag by providing increased situational awareness to pilots. Likewise, the radio altimeter required under these rules will provide increased situational awareness by providing pilots with additional information about their altitude above the ground.

The FAA received several comments addressing the flexibility in the rule and whether the implementation timeline is appropriate. Commenters including AMOA and PHI expressed the need for minimum equipment list (MEL) relief for HTAWS in the event that the unit is inoperable. Air Methods stated that the rule's reliance on the technical standard order (TSO) process would ''inhibit future technological benefits without a lengthy rule changing process.'' The Health Care District of Palm Beach County stated that, in the future, HTAWS may not be the most effective way to achieve terrain and obstacle avoidance. AMOA commented that the rule should be performance based to allow flexibility for incorporation of later technology.

LifeFlight of Maine and other members of the ACCT stated that they believed that the 3-year timeline for

[16] The report can be accessed at: *http://www.ntsb.gov/safety/safetystudies/sir0601.html* (December, 10, 2013).

implementation provides ample time to comply with the rule and to finance the costs. They did not agree with extending the time to comply or limiting the applicability of this requirement. FreeFlight Systems also commented that the 3-year implementation period seemed reasonable.

Bristow Group noted its support for requiring all helicopters engaged in commercial service to be equipped with HTAWS if not already equipped with a radio-altimeter-based warning system.

The FAA acknowledges that technology could be improved over time, but does not agree that mandating this particular type of equipment will constrain the ability to embrace new technologies. Incorporation by reference of new TSO requirements allows the agency to adopt revised technological standards. The need to incorporate new TSOs into the regulation, due to technological innovation, will not hinder adoption of that technology in helicopter air ambulances.

In response to comments on the need for flexibility should an HTAWS unit become inoperable, the FAA agrees that an HTAWS may meet the requirements for MEL relief with certain conditions on the types of operations that could be conducted while the HTAWS was inoperable. The exact scope of such relief will be addressed through the FAA's standard MEL process.

Based on the comments received, the FAA has determined that the compliance date for the HTAWS requirement does not need to be extended. Extending the HTAWS requirement to the entire commercial helicopter population would be outside the scope of this rulemaking.

Finally, West Michigan Air Care estimated that its cost of compliance with the HTAWS requirement would be $75,000 for its two-helicopter air ambulance operation. The FAA notes that this estimate is consistent with the FAA's estimate of $35,000 per helicopter for equipment and installation, plus $7,000 for revenue loss for equipment downtime. Additionally, while the FAA recognizes the financial burden new equipment requirements impose on operators, providing 3 years from the effective date of the final rule for installation will allow certificate holders to spread the cost of compliance over that period of time and take advantage of scheduled downtime for maintenance.

This rule is adopted as proposed with minor edits for clarification.[17]

[17] Section 306(c)(3) of the FAA Modernization and Reform Act of 2012 (Pub. L. 112–95) requires the FAA to conduct a rulemaking that addresses use of HTAWS in helicopter air ambulance operations.

10. Flight Data Monitoring System (§ 135.607) [18]

In the NPRM, the FAA stated it was considering requiring helicopter air ambulance operators to install a flight data monitoring system, referred to in the NPRM as a light weight aircraft recording system (LARS).[19] Currently, § 135.151 requires a cockpit voice recorder (CVR) system in rotorcraft with a passenger seating configuration of six or more seats and for which two pilots are required. Section 135.152 requires flight data recorders (FDRs) in rotorcraft with a passenger seating configuration of 10 or more seats. Most helicopters used in air ambulance operations are configured with fewer than six passenger seats, and thus are not required to be equipped with either CVRs or FDRs.

In the NPRM, the FAA invited comments on the flight data monitoring system proposal under consideration. The FAA proposed that the flight data monitoring system ''would be required to capture data according to a broadly defined set of parameters including information pertaining to the aircraft's state (such as heading, altitude, and attitude), condition (such as rotors, transmission, engine parameters, and flight controls), and system performance (such as full authority digital engine control, and electronic flight instrumentation system).'' Further, as proposed, the flight data monitoring system would have to be operated from the application of electrical power before takeoff until the removal of electrical power after termination of flight. It would be required to receive electrical power from the bus that provides the maximum reliability for operation without jeopardizing service to essential or emergency loads. Under the proposal, certificate holders would have had 3 years to comply with the rule. The FAA noted a flight data monitoring system can be used to promote operational safety, and that, because so few certificate holders are using such systems, it may be necessary to require them. Likewise, the FAA stated that these systems can provide critical information to investigators in the event of an accident.

The FAA received numerous comments on this proposal regarding flight data monitoring system use in accident investigation and Flight Operational Quality Assurance (FOQA) programs, the standards for the flight data monitoring system, the rule's implementation date, and the FAA's cost estimate.

Accident Investigation/Use in a FOQA Program

Many commenters supported a requirement for FOQA. LifeFlight of Maine and members of ACCT support both a requirement to install a flight data monitoring system and a requirement to participate in the FOQA program, and commented that flight data monitors can assist with accident investigation. They recommended that the FAA conduct a joint technical study with the NTSB and air ambulance operators who are using a FOQA program to determine the data capture rate needed to meet NTSB accident investigation needs and what data feedback requirements would best support FOQA programs. Eurocopter commented that FOQA use is preferable to use in accident investigation, and the Global Helicopter Flight Data Monitoring Steering Group commented that accident investigation use is only reactive, but FOQA use can be proactive.

PHI supports installation and use of a flight data monitoring system in air ambulance aircraft. It suggested requiring operators to develop an internal process for using data collected by the system for analysis, identification and mitigation of at-risk behaviors across the organization, as well as development of supplemental educational opportunities for air ambulance pilots. PHI said that the focus of the flight data monitoring system should be to prevent accidents. It said the emphasis should be placed on FOQA and flight data management implementation and benefits. HAI supports and encourages flight data monitoring technology because it has obvious safety benefits for accident investigation and the potential for development of FOQA and other safety programs. Alakai Technologies Corporation commented that the requirement should be extended across all helicopter operations.

An individual commented that satellite tracking, currently in use by his company, records flight information that can be used to help rescue the aircraft and provides the necessary information on aircraft operations making a flight

[18] Section 306(a) of the FAA Modernization and Reform Act of 2012 (Pub. L. 112–95) directs the FAA to conduct rulemaking on helicopter air ambulance operations to address ''safety enhancing technology and equipment,'' including ''devices that perform the function of flight data recorders and cockpit voice recorders.'' Though the benefits are less than costs for this provision, it satisfies the Congressional mandate as required by the Act.

[19] Although the NPRM did not contain proposed rule text, the FAA provided a detailed discussion of the proposals under consideration and asked for comments in anticipation of including an FDMS requirement in the final rule.

data monitoring system unnecessary. Kestrel Air stated that the cause of most air ambulance accidents is already known and that flight data monitoring systems do not record flight visibility data, thus adding little value to analyzing IIMC encounters.

A FOQA program is meant to improve flight safety by providing more information about, and greater insight into, the total flight operations environment. This is accomplished with selective automated recording and analysis of data generated during flight operations. Analysis of FOQA data can reveal situations that require improvement—in operations, in training, and in maintenance procedures, practices, equipment, or infrastructure.

In response to comments about mandatory FOQA participation, the FAA notes that 14 CFR part 13, Investigative and Enforcement Procedures, states conditions under which information obtained from an approved voluntary FOQA program will not be used in enforcement actions against an operator or its employees. Part 193, Protection of Voluntarily Submitted Information, contains provisions for certain protections from public disclosure of voluntarily submitted safety-related information when such information has been designated by an FAA order as protected under that part. As stated in the NPRM, these protections are available only if the data is collected by the operator as part of a voluntary FAA-approved program. In support of this public safety objective, the FAA has endorsed the development and implementation of voluntary FOQA programs as a tool for continuously monitoring and evaluating operational practices and procedures, but maintaining the voluntary nature of the program is paramount and does not allow the FAA to mandate FOQA for any operator.

As discussed in the NPRM, this equipment may be used to provide significant information for investigators to determine accident causation, which may help to prevent future accidents. In addition, the data can be used proactively by an operator to modify operational and maintenance procedures for increased efficiency and lower costs, to provide immediate feedback to pilots in training, and to highlight areas where additional training may be needed.

The final rule requires certificate holders operating helicopter air ambulances to install and operate a flight data monitoring system in their helicopters. The FAA is not extending this requirement to all helicopter operations because that option was not presented in the NPRM. Although the FAA encourages operators to take advantage of the many uses of this data, this final rule does not require data collection because mandating it would open up that data to FAA surveillance, amounting to a required submission. The FAA is concerned that such an action would discourage operators from participating in a FOQA program.

Although operators will not be required to collect data from the flight data monitoring system, the FAA encourages them to gather this information and analyze it for use in improving safety in their day-to-day operations. Based on current practice, some will choose to use the system this way. The rule will not preclude operators from participation in an FAA-approved FOQA program, and data submitted voluntarily as part of a FOQA program will be protected under part 193.

The FAA anticipates that the information that this equipment can gather may be used as a supplement to a certificate holder's training program.

Flight Data Monitoring System Capabilities

The FAA received many comments on the flight data monitoring system standards discussed in the NPRM, including several stating that a regulation is not appropriate at this time. However, the FAA also received comments in support of flight data monitoring system, including from the NTSB.

AAMS supports installation of a flight data monitoring system on air ambulance helicopters but says the proposal was not specific enough to justify a regulation at this time. NORTH Flight Data Systems stated a regulation would slow technological development of these systems. PHI recommended that the FAA conduct a comprehensive outreach process in partnership with certificate holders who currently have a flight data monitoring system installed and are participating in flight data monitoring FOQA programs. The commenter suggested this as a way to determine what data is needed for flight data management and what are realistic cost estimates for installing those systems and operating a fully functional flight data monitoring FOQA program.

AMOA suggested waiting to establish a regulation until there is a more thorough understanding of current products, but also noted the need for MEL relief if a rule were adopted. HAI stated the technology is not sufficiently mature at this time to justify a regulation. Eurocopter recommended defining the required parameters in conjunction with aircraft manufacturers before regulating. Honeywell International also suggested the development of minimum performance specifications. The General Aviation Safety Network commented that what was proposed, with respect to required parameters, is too close to an FDR.

The FAA also received several comments on whether the flight data monitoring system under the rule would need to comply with European Organization for Civil Aviation Equipment (EUROCAE) Document ED–155 or TSO–C197.

NTSB said that a recorder that complies with ED–155 would be a valuable aid to accident investigations and would be fully capable of supporting a structured flight data monitoring program. The NTSB notes that a considerable amount of work has been done by EUROCAE (with full participation by both the FAA and the NTSB) to develop standards for light-weight flight recording devices that would fulfill the requirements outlined in the NPRM. The ED–155 standard covers FDR-like data recording, CVR-like audio recording, cockpit video, and data-link message recording. Several manufacturers are producing recorders to this standard at a cost of less than $10,000.

FreeFlight Systems, an avionics manufacturer, said that TSO–C197 will drive up costs because it does not allow commercial-grade operating systems. This commenter said that, rather than using a TSO, a parts manufacturer approval (PMA) should suffice, since a flight data monitor failure does not endanger the airframe or other systems in the aircraft. For accident investigation purposes, FreeFlight indicated that it produces a hardened memory unit which provides protection of vital information in the event of a crash. It has significant ballistics protection and can withstand a temperature of 1,100 degrees Celsius for up to an hour.

The General Aviation Safety Network commented that no certification should be required, except for RTCA DO–160E environmental categorization. NORTH Flight Data Systems commented that the ''crashworthy focus'' of the NPRM will make many products undergo redesign to meet the TSO or ED–155 standards.

The FAA agrees with the NTSB that several manufacturers have recording systems able to record flight performance data, audio, images, and data-link messages. This final rule is performance based and compliance with this rule does not necessarily require

installation of a TSO-approved system. However, TSO–C197-approved articles are an acceptable means of compliance with new § 135.607. This equipment must be capable of recording flight performance data. Considering the availability of such technology, the FAA has determined that a final rule requiring all air ambulance helicopters to equip with a flight data monitoring system is justified. This final rule requires installation and operation of a flight data monitoring system, but it does not require collection of data from that equipment or development of data collection processes.

In response to these comments, the FAA offers clarification. The parameters described in the NPRM were meant to illustrate the type of data that could be collected by this equipment. In the final rule, the FAA does not specify parameters of data or specifically identify a set of performance standards that must be met. The final rule also does not require data collection or data analysis. It requires only that a flight data monitoring system capable of recording flight performance data be installed. This final rule simply requires equipment—not data collection. The rule does not establish standards for crashworthiness or environmental testing. This final rule uses a cost model for an approved flight data monitoring system designed and produced under a TSO–C197 authorization.

It would be outside the scope of the rule to require satellite tracking of helicopter air ambulances because it was not proposed in the NPRM. In developing the 2010 NPRM, the FAA intended that compliance with § 135.607 would be met by an FDR-like system installed and recording on the helicopter. An operator may demonstrate that a satellite tracking system, combined with onboard reporting, has the capability to meet the standards in § 135.607.

The FAA anticipates that relief could be granted for operations with an inoperable flight data monitoring system. While a flight data monitoring system is a valuable tool that can be used for accident investigation, it is a passive device that collects information and is not essential for safe operation in the way an oil pressure gauge would be. The particular requirements relating to operations with an inoperable flight data monitoring system would be developed by FAA's Flight Standards Service for its MEL program.

Implementation Date for the Flight Data Monitoring System

AMOA recommended that the FAA not issue a rule requiring flight data monitoring systems until there is a better understanding of current products. PHI said that a 3-year implementation time is too ambitious. HAI strongly supports flight data monitoring technology, but does not believe it is sufficiently mature at this time to serve as the basis for a regulatory equipment mandate. HAI and LifeFlight of Maine recommend establishment of a joint FAA/industry work group to collect relevant data and conduct a study on which to base long term guidance. The NTSB, in discussing the work that EUROCAE has done to develop standards for light-weight flight recording systems, said an ED–155-compliant recorder would be an aid to accident investigation and encouraged the FAA to include a requirement for a flight data monitoring system in the final rule. AMOA commented that operators have reported significant delays in the approval process for all types of equipment installations. It asked for expedited approval for any required new equipment

The FAA has carefully reviewed the comments that industry needs sufficient time to manufacture, obtain and install equipment that meets the required performance standards. After considering comments, the FAA has determined that it is appropriate to allow 4, rather than 3 years from the effective date of the rule for compliance. This extra year is warranted to provide additional time for operators to obtain and install equipment.

Cost Estimate for Flight Data Monitoring Systems

In the NPRM, the FAA estimated that the cost of a flight data monitoring system would be $6,450 for equipment and installation, and accompanying software would cost $750 per year. There was also a $1,913 average 10-year cost estimate for evaluation, analysis, and use of the recorded data. The FAA asked the public to evaluate the accuracy of this cost information and those comments are summarized below.

Bristow Group stated that this equipment is affordable and effective and that the FAA should mandate it for all commercial helicopters that are not already required to have FDR. It asserts that this equipment is proven to bring safety and financial benefits to all types of commercial helicopter operations.

Some commenters, including AMOA, PHI, LifeFlight of Maine, AAMS, and Air Evac EMS, said that cost estimates for the flight data monitoring system presented in the NPRM were unrealistic. They said that equipment bought at that price would not be able to perform all the functions mentioned in the NPRM. They also said that the FAA's estimates had not included the cost of installation, the cost of time out of service, or the cost of reviewing data collected by the device. AMOA contended that there is no current device that can perform all the functions listed in the proposal. AMOA estimated that flight data monitoring system costs are more than $30,000, plus costs associated with the development of supplemental type certificates, installation, and time out of service. PHI estimated the actual cost of a complete flight data monitoring software platform can range from $50,000 to in excess of $120,000—a cost that does not include hardware, manpower, or recurring service/support and training. LifeFlight of Maine stated that one member, who is a part 135 certificate holder with an FAA approved FOQA and a flight data monitoring system, found the costs for purchase, installation and data collection/analysis to be $27,250 per aircraft. AAMS stated that reports from its providers already using flight data monitoring systems suggested that the FAA estimates for equipment purchase and installation are 4 to 5 times too low and did not account for program maintenance, data storage, and report development. Air Evac EMS estimated the total cost to be more than $40,000, plus costs associated with the development of supplemental type certificates, installation, time out of service, and very expensive service contracts.

PHI agreed with AMOA on the cost analysis, saying that the FAA had ''grossly underestimated'' the cost of flight data monitoring equipment, accompanying analysis software, and flight data monitoring FOQA program development and maintenance costs. These commenters argued that no system on the market could accomplish all the tasks specified in the NPRM at the price of $6,450. PHI also commented that ''another cost driver for LARS will be the level of crash survivability specified.'' PHI strongly urged the FAA to develop unique specific minimum operational performance specifications (MOPS) or a TSO for helicopter flight data monitoring systems. PHI contended that if this equipment is held to the crashworthiness called for in ED–155, some operators will not be able to afford it.

In response to these comments, we note that the FDM capability described in the NPRM was meant to illustrate the type of data that could be collected by this equipment. We did not intend to propose an FDM system that must record all information pertaining to the aircraft's state (such as heading, altitude, and attitude), condition (such

as rotors, transmission, engine parameters, and flight controls), and system performance (such as full authority digital engine control, and electronic flight instrumentation system) that was discussed in the NPRM. Under this rule, the operator would be able to determine the parameters that the FDM would record. Our estimate of $6,450 ($5,950 plus $500 for installation) was based on a device that could meet the intent of the proposal, not one that could capture every parameter listed as examples in the NPRM.

However, based on the comments received, the FAA reviewed and revised the FDMS cost estimates. In the final rule, the FAA specifically identifies a set of performance standards that must be met. While these performance standards are based on certain requirements in TSO–C197 and ED–155, the final rule does not require equipment that is compliant with TSO–C197 or ED–155. The FAA is aware of equipment that meets TSO–C197 requirements that is currently available for $7,000 and uses this estimate in the final rule. The FAA also now estimates that installation would cost $8,000 (80 hours x $100 per hour) which would include time to run operational performance tests on the FDMS. We estimate a one-time revenue loss of $7,000 per day for installation. Therefore, the FAA estimates the total cost per helicopter to be $22,000 ($7,000 equipment, $8,000 installation, $7,000 revenue loss). Additionally we estimate that operators will incur two, one-time, hardware and software license fee costs of $2,500 and $750, respectively. For detailed cost information see the accompanying regulatory evaluation.

Final Rule

This final rule will require installation of a flight data monitoring system capable of recording helicopter flight performance and operational data.[20] It will not require data collection or prescribe standards or parameters for data collection. The flight data monitoring system must be activated and operative from the time electrical power is turned on before takeoff until it is turned off after the end of the flight. Helicopter air ambulance operators will have 4 years to comply with the rule. Helicopters equipped with an operational FDR that meets the requirements of § 135.607(a)–(b) will be in compliance with this rule.

This rule addresses parts of NTSB Safety Recommendations A–06–17 and A–09–90.

11. Pilot Instrument Ratings (§ 135.603)

The FAA proposed to add § 135.603 to require a helicopter air ambulance pilot to hold a helicopter instrument rating. Currently, § 135.243(b) requires the pilot in command of a helicopter air ambulance to hold, at a minimum, a commercial pilot certificate. Helicopter air ambulance pilots are not currently required to hold instrument ratings unless they will be flying under instrument flight rules (IFR) or, when flying under visual flight rules (VFR), they will be flying above a cloud layer (commonly called ''VFR over-the-top'').

The FAA received comments expressing support for the proposal from commenters including the NTSB, AMOA, AAMS, Air Evac EMS, NEMSPA, and Safety and Flight Evaluations, International.

The NTSB agreed with the requirement for a helicopter air ambulance pilot to hold an instrument rating, but stated that helicopter air ambulance pilots should maintain instrument currency. It commented that instrument currency is generally acknowledged to be a skill that deteriorates rapidly without continued practice and use. AMOA, NEMSPA, Safety and Flight Evaluations, International and numerous individual commenters also suggested that the FAA require helicopter air ambulance pilots to maintain currency or routinely demonstrate the ability to recover from IIMC. Several commenters noted that this requirement should be applied to all commercial pilots.

Identical comments from two individuals suggested requiring frequent short training sessions involving unplanned entry into IMC followed by an instrument approach to landing at least quarterly in an approved aircraft or simulator. They suggested a requirement that a table-top PC-based navigation system trainer or similar device be used at least monthly. They commented that the FAA should not require using a non-motion visual flight simulator with wrap-around visual display. They requested that the FAA prohibit flight assignment within 24 hours of training in a non-motion visual flight simulator with wrap-around visual display.

The FAA notes that IIMC is a common factor in helicopter air ambulance accidents and the intent of the instrument rating requirement is to ensure that helicopter air ambulance pilots are better equipped to handle these situations. A pilot who receives this rating is better equipped to maintain situational awareness and maneuver the helicopter into a safe environment. Requiring an instrument rating, without a requirement to maintain instrument currency, will allow a VFR operator to expend fewer resources than required to meet full currency requirements while ensuring that pilots have the skills necessary to extract themselves from IIMC. Additionally, mandating instrument currency for all commercial pilots is beyond the scope of the current rulemaking.

To prevent IIMC accidents, § 135.293 requires that pilots demonstrate the ability to recover from IIMC during their annual competency checks. The FAA notes that the IIMC-recovery portion of the competency check could be performed in a simulator or flight training device, provided that it is consistent with that device's specific approval. Pilots who obtain the instrument rating supplemented by the preparation for the annual competency check will be adequately prepared to recover from IIMC.

This rule is adopted as proposed.

E. General Comments

FAA Oversight Resources/Delay in Approval/Expedited Approval Process

AMOA commented that numerous operators report significant delays in the approval process for all types of equipment installations. It expressed concern about the FAA's ability to inform and educate field personnel, such as Flight Standards District Offices (FSDOs) and headquarters inspectors, about new rule requirements. It maintained that there are a wide range of interpretations and implementations of rules, resulting in a lack of standardization throughout the FAA.

The FAA understands the commenter's concern and has issued guidance for inspectors to ensure uniform application of the rule's requirements. This rule also contains delayed compliance dates for several of its provisions, which will give certificate holders time to purchase and install the required equipment and to develop and implement required procedures.

Night Vision Goggles and Autopilots

The NPRM did not propose requiring night vision goggles (NVGs) or night vision imaging systems (NVIS). The NPRM included a statement explaining that the FAA considered allowing NVGs as an alternate method of compliance for the HTAWS requirement, but

[20] Section 306(d)(2) of the FAA Modernization and Reform Act of 2012 (Pub. L. 112–95) requires the FAA to conduct a rulemaking that addresses use of devices that perform the function of flight data recorders and cockpit voice recorders, to the extent feasible, in helicopter air ambulance operations.

decided that this technology might not be appropriate for all operations and that the FAA required further study on this equipment before allowing its use instead of HTAWS.

Numerous commenters, including AMOA, PHI, Air Evac EMS, NEMSPA, LifeFlight of Maine, FreeFlight Systems, and AAMS expressed support for an NVG or night vision imaging system requirement in this rule. Many commented that night vision technology should be mandated in lieu of HTAWS. AAMS commented that HTAWS and NVGs should be required together as each provides benefits that complement the other. LifeFlight of Maine commented that HTAWS and NVG should be a minimum standard for night operations. The FAA did not receive any comments stating that the FAA should not require NVGs or night vision imaging systems.

As stated in the NPRM, the FAA considered allowing certificate holders to use NVGs or night vision imaging systems as an alternative to HTAWS but did not include such a proposal in the NPRM for numerous reasons. Night vision goggles may not be appropriate for all operations, such as inadvertent flight into IMC. Additionally, the FAA stated that it must conduct further research to determine the most appropriate use of NVGs before allowing operators to use them as an alternate means of compliance. *See* 75 FR 62654. The FAA is, however, currently investigating the benefits, uses and limitations of NVGs.[21]

Similarly the FAA received comments questioning why this rule did not mandate an autopilot requirement. The NTSB commented that the NPRM did not address Safety Recommendation A–09–96, which recommended that the FAA require all EMS helicopters to be equipped with an autopilot for single-pilot operations. NTSB believes that an autopilot is a significant aid for unexpected high workload situations, such as IIMC. LifeFlight of Maine, Boston MedFlight, Life Flight Network, Angel One Transport, NEMSPA, Safety and Flight Evaluations, International, members of ACCT, and several individual commenters also expressed support for an autopilot requirement. Association of Air Medical Services supported the added safety benefits of autopilot technology but commented that further research, development, and industry collaboration is necessary before a regulatory requirement is considered.

The FAA did not include an autopilot requirement in the NPRM. Therefore, mandating an autopilot unit is outside the scope of this current rulemaking. Furthermore, the FAA concluded that requiring autopilots on helicopter air ambulances in this current rulemaking would be premature. Autopilot units may be cost prohibitive and not widely available, and may pose space and weight issues for helicopters not equipped to handle the units.

Public Aircraft Operations

The FAA received several comments from public safety organizations, including the International Association of Fire Chiefs and the Department of California Highway Patrol, asking about the applicability of this rule to ''public safety operations'' or stating their understanding that the part 135 provisions would not be applicable to such operations. The San Bernardino County Sheriff's Department commented that applying the proposed rules to its public safety operations would limit its ability to conduct its operations and ''render unusable 50% of the helicopter EMS aircraft'' in the county.

In contrast, several commenters, including AMOA, PHI, and West Michigan Air Care, expressed support for extending the provisions of this rule to include public aircraft operations. PHI expressed support for requiring public aircraft operations to comply with the rules proposed in the NPRM, stating that the thousands of passengers transported every year by government operators should benefit from the safety enhancements in the proposed rule. It stated that the FAA has been inconsistent in providing civil aircraft regulatory oversight of government operators engaged in air ambulance operations. PHI also highlighted NTSB Safety Recommendation, A–09–130, which calls for the FAA to seek specific legislative authority to achieve safety oversight of helicopter air ambulance operations conducted using government-owned aircraft. The Airborne Law Enforcement Association suggested that the FAA establish a definition of ''public safety HEMS aircraft.''

In response, the FAA clarifies that the part 135 provisions of this rule do not apply to public aircraft operations. The FAA has statutory authority to promote safe flight of civil aircraft in air commerce. *See* 49 U.S.C. 44701(a). This authority does not extend to public aircraft operations.

Public aircraft operation is limited by statute to certain government operations within U.S. airspace. *See* 49 U.S.C. 40102(a)(41), 40125. Although these operations must comply with certain general operating rules (including those applicable to all aircraft in the National Airspace System), other civil certification and safety oversight regulations do not apply. Whether an operation may be considered a public aircraft operation is determined on a flight-by-flight basis, under the terms of the statute. The FAA considers the following factors in making these determinations: aircraft ownership, the purpose of the flight, and the persons on board the aircraft.

Specifically, 49 U.S.C. 40102(a)(41)(C) includes as a public aircraft ''an aircraft owned or operated by the government of a State . . . or a political subdivision of [one of these] governments, except as provided in section 40125(b).'' *See* Legal Interpretation to Ray Borrato, from Rebecca B. MacPherson, Assistant Chief Counsel for Regulations (July 14, 2011). Section 40125(b) states that an aircraft included in § 40102(a)(41)(C) ''does not qualify as a public aircraft . . . when the aircraft is used for commercial purposes or to carry an individual other than a crewmember or a qualified non-crewmember.'' ''Commercial purposes'' under the statute means ''the transportation of persons or property for compensation or hire. . . .'' If an operator receives compensation for conducting operations it would not be providing the service as a public aircraft operation, but as a commercial vendor. Those flights would not qualify as public aircraft operations and the operator would be required to comply with the certification and operating rules of 14 CFR part 135.

To that end, we note that the part 135 provisions of this rule would apply only to civil aircraft operations and would not apply to public aircraft operations. Accordingly, an aircraft operator that only performs public aircraft operations would not need to hold a part 119 operating certificate permitting part 135 operations. An operator that conducts both public aircraft operations and civil operations would need to hold a part 119 operating certificate and conduct its civil operations pursuant to part 135 rules. We also note that public aircraft operations must adhere to part 91 airspace rules; therefore, the provisions of § 91.155 would apply to both public and civil operations.

The FAA encourages government entities that conduct public aircraft operations to inform the local FSDO that they conduct public aircraft operations in the FSDO's area to avoid confusion

[21] Section 318 of the FAA Modernization and Reform Act of 2012 (Pub. L. 112–95) requires the FAA to study the ''feasibility of requiring pilots of helicopters providing air ambulance services under part 135 . . . to use NVGs during nighttime operations.''

about the oversight of those operations. The FAA conducts surveillance and oversight of part 119 certificates holders, including government entities that hold such certificates, to verify that they are complying with appropriate rules during civil operations.

IV. Regulatory Notices and Analysis

A. Regulatory Evaluation

Changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 and Executive Order 13563 directs that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its 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 unnecessary obstacles to the foreign commerce of the United States. In developing U.S. standards, this Trade Act requires agencies to consider international standards and, where appropriate, that they be the basis of U.S. standards. 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 likely to result in the expenditure by State, local, or tribal governments, in the aggregate, or by the private sector, of $100 million or more annually (adjusted for inflation with base year of 1995). This portion of the preamble summarizes the FAA's analysis of the economic impacts of this rule. We suggest readers seeking greater detail read the full regulatory evaluation, a copy of which we have placed in the docket for this rulemaking.

In conducting these analyses, FAA has determined that this final rule: (1) Has benefits that justify its costs; (2) is not an economically ''significant regulatory action'' as defined in section 3(f) of Executive Order 12866; (3) is ''significant'' as defined in DOT's Regulatory Policies and Procedures; (4) will have a significant economic impact on a substantial number of small entities; (5) will not create unnecessary obstacles to the foreign commerce of the United States; and (6) will not impose an unfunded mandate on state, local, tribal governments, or on the private sector by exceeding the threshold identified above. These analyses are summarized below.

Total Benefits and Costs of This Rule

The estimated mean benefit value for the rule will be about $821 million, or $577 million present value, over ten years. The FAA estimates the cost of this rule will be approximately $311 million, or $243 million present value, over ten years.

Who is potentially affected by this rule?

Helicopter air ambulance operators, commercial helicopter operators, helicopter aerial application operators, and helicopter external load operators.

Assumptions:

- The rule is expected to take effect in 2013. The time horizon for these potential benefits is 10 years, 2013 through 2022.
- All monetary values are expressed in constant 2013 dollars. We calculated the present value of the potential benefit stream by discounting the monetary values using a 7 percent interest rate from 2013 to 2022.
- The FAA estimated that the helicopter fleet would grow at 2.8 percent per year.

Benefits of This Rule

Benefits will accrue from the implementation of new operational procedures and additional equipment requirements for helicopter air ambulances. This final rule also increases safety for commercial helicopter operations by revising requirements for equipment, pilot training, and alternate airports and it increases weather minimums for helicopters operating under part 91. The estimated mean benefit value for these provisions will be $821 million, or $577 million present value, over ten years.

Costs of This Rule

The FAA estimates the cost of this rule will be approximately $311 million, or $243 million present value, over ten years.

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) establishes ''as a principle of regulatory issuance that agencies shall endeavor, consistent with the objective of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the business, organizations, and governmental jurisdictions subject to regulation.'' To achieve that principle, the RFA requires agencies to solicit and consider flexible regulatory proposals and to explain the rationale for their actions. The RFA covers a wide range of small entities, including small businesses, not-for-profit organizations and small governmental jurisdictions.

Agencies must perform a review to determine whether a proposed or final rule will have a significant economic impact on a substantial number of small entities. If the agency determines that it will, the agency must prepare a regulatory flexibility analysis as described in the Act.

Based on the criteria used in the initial regulatory flexibility analysis and used again here, this rule will have a significant economic impact on a substantial number of small entities. The FAA's usual threshold for economic significance is a 2 percent annual compliance cost to operating revenue. However, we elected to use a more conservative threshold of 1 percent annual compliance cost to operating revenue in this rulemaking. In the initial regulatory flexibility analysis, we stated that the proposed rule would cause small air ambulance operators to incur compliance costs such that the ratio of annual compliance cost to annual revenue ranged between 1.76 and 1.88 percent, which we considered significant. We did not receive any comments on this determination. In the final regulatory flexibility analysis, we have updated the ratio of annual compliance costs to annual revenue to a range between 1.80 to 1.87 percent, but our determination has not changed—this rule will have a significant economic impact on a substantial number of small air ambulance operators.

This final rule will impact air ambulance, air tour, on demand, aerial application, and external load operators. The U.S. Small Business Administration (SBA) classifies businesses as small based on size standards, typically expressed as annual revenue or number of employees. SBA publishes a table of small business size standards matched to North American Industry Classification System (NAICS) codes. Table 5 shows the size standards for the entities that will be affected by this rule.

Table 5. SBA Size Standards		
NAICS U.S. Industry Title	Affected Entity	Annual Revenue or Employee Threshold for Small Business
Other nonscheduled air transportation	Air ambulance operators	<$7 million
Scenic and sightseeing transportation	Air tour operators	<$7 million
Nonscheduled chartered passenger air transportation	On demand operators	<1,500 employees
Other support activities for air transportation	Aerial applications	<$7 million
Other support activities for air transportation	External Load	<$7 million

Air Ambulance Operators

Because we did not have actual annual revenues for air ambulance operators, we estimated them using helicopter counts as a revenue driver. We assumed an average of 367 operations per year for each helicopter and a charge of $7,000 per operation. The FAA estimated 35 small air ambulance operators (with estimated revenues lower than $7 million) out of the 73 air ambulance operators that will be affected by this regulation, which we consider a substantial number of small entities. Their ratio of annualized cost to annual revenue ranges from 1.80 to 1.87 percent. Based on the criteria used in the initial regulatory flexibility analysis and used again here, this rule will have a significant economic impact on a substantial number of small air ambulance operators. Accordingly, the FAA prepared a regulatory flexibility analysis for small air ambulance operators, as described in the next section.

Air Tour Operators

We assumed an average of 747 air tour operations per year for each helicopter and a charge of $1,689 [22] per air tour operation. As such, the FAA identified 31 small air tour operators (with estimated revenues lower than $7 million) out of the 46 air tour operators that will be affected by this regulation, which we consider a substantial number of small entities. Their ratio of annualized cost to annual revenue for air tour operators ranges from 0.08 to 0.26 percent, which is not significant. While this rule will affect a substantial number of small air tour operators, they will not incur a significant economic impact.

On Demand Operators

The FAA identified 370 small on-demand operators (with 1,500 or fewer employees) out of the 379 that will be affected by this regulation, which we consider a substantial number of small entities. Although their annualized compliance costs range from $980 to $72,784, we were unable to estimate their annual revenues because average revenue per flight for these entities is not meaningful. There are a number of factors (e.g., length of flight, type of helicopter) that determine the revenue for an individual flight. These factors are not likely to result in a distribution around a meaningful average revenue. At the higher end of the compliance cost range, the economic impact may well be significant, but again, we cannot validate such an estimate. In the NPRM, we asked on-demand operators to provide financial data pertaining to the rule's impact on their operations, but we did not receive any comments in response to this request. Therefore we still have no annual revenue data for these operators.

Aerial Application Operators (Part 137)

We assumed an average of 81 aerial application operations per year for each helicopter and a charge of $500 per aerial application operation. The FAA identified 224 small aerial application operators (with estimated revenues lower than $7 million) out of the 224 aerial application operators that will be affected by this regulation, which we consider a substantial number of small entities. Their ratio of annualized cost to annual revenue is 0.01 percent, which is not significant. While this rule will affect a substantial number of small aerial application operators, they will not incur a significant economic impact.

External Load Operators (Part 133)

We assumed an average of 1,159 external load operations per year for each helicopter and a charge of $625 per external load operation. The FAA identified 197 small external load operators (with estimated revenues lower than $7 million) out of the 219 external load operators that will be affected by this regulation, which we consider a substantial number of small entities. Their ratio of annualized cost to annual revenue is less than 0.01 percent, which is not significant. While this rule will affect a substantial number of small external load operators, they will not incur a significant economic impact.

Regulatory Flexibility Analysis

Under section 603(b) of the RFA (as amended), each regulatory flexibility analysis is required to address the following points: (1) Reasons the agency considered the rule, (2) the objectives and legal basis for the rule, (3) the kind and number of small entities to which the rule will apply, (4) the reporting, recordkeeping, and other compliance requirements of the rule, and (5) all Federal rules that may duplicate, overlap, or conflict with the rule.

Reasons the FAA Considered the Rule

Helicopter air ambulance accidents reached the highest levels in history during the years from 2003 through 2008.[23] The year 2008 was the deadliest. In 2008, five air ambulance accidents killed 21 people, including pilots, patients, and medical personnel. A total of 62 helicopter air ambulance accidents occurred during the period from 1991 through 2010, and this number included 125 fatalities and a midair collision between two helicopter air ambulances. Commercial helicopters other than air ambulances had accidents as well. From 1991 through 2010, these helicopters had 20 accidents and 39 fatalities.

There were four common factors in these accidents—night conditions, inadvertent flight into instrument meteorological conditions, loss of control, and controlled flight into terrain.

The impetus for this rulemaking is the number of helicopter accidents, noted above. Helicopter air ambulances operate under unique conditions. Their flights are often time-sensitive, putting pressure on the pilots. Helicopter air ambulances operate at low altitudes and under varied weather conditions. These pilots fly year-round in rural and urban settings, over mountainous and non-

[22] We multiplied the average revenue per person for 5 different operators ($380.56/person) by the average hours per operation (0.7396 hours/operation) and by the average revenue passengers per helicopters (6 passengers/helicopter).

[23] GAO, Aviation Safety: Potential Strategies to Address Air Ambulance Safety Concerns (2009).

mountainous terrain, during the day and during the night, and in conditions where visibility is good and in conditions where it is not. They must often land at unfamiliar, remote, or unimproved sites with hazards like trees, buildings, towers, wires, and uneven terrain.

In an emergency, many patients will not have a choice of whether they want to be transported in a helicopter. They may be in a medical condition that prevents them from making decisions about transportation or indicating what they want. They cannot choose between competing carriers because the company that responds to the scene may be either the only one in the area or the first one called. For these reasons, and those discussed previously, the FAA is establishing more stringent safety regulations to protect patients, medical personnel and flight crewmembers onboard helicopter air ambulances.

The Objectives and Legal Basis for the Rule

The FAA's authority to issue rules on aviation safety is found in Title 49 of the United States Code. This rulemaking is promulgated under the authority described in 49 U.S.C. 44701(a)(4), which requires the Administrator to promulgate regulations in the interest of safety for the maximum hours or periods of service of airmen and other employees of air carriers, and 49 U.S.C. 44701(a)(5), which requires the Administrator to promulgate regulations and minimum standards for other practices, methods, and procedures necessary for safety in air commerce and national security.

The Kind and Number of Small Entities to Which the Rule Will Apply

The FAA identified 35 small air ambulance operators on which the rule will have a significant economic impact. We estimate that the small air ambulance operators have annual revenues between $2.6 million and $5.1 million.

The Reporting, Recordkeeping, and Other Compliance Requirements of the Rule

As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), the FAA will submit a copy of these sections to the Office of Management and Budget (OMB) for its review. The following provisions apply to the Paperwork Reduction Act.

Table 6. Costs and Present Value (PV) Costs for Small Air Ambulance Operators that Apply to the Paperwork Reduction Act (over 10 years)

Provision		Costs	PV Costs
A.1.b	Pilots' Worksheets	$670,340	$465,186
A.1.b	Training records for operators without OCCs	$609	$422
A.1.b	Develop OCS training/amendment to existing manual	$71,952	$67,254
A.1.c	Local flying area	$3,648	$3,409
A.1.c	VFR flight planning	$1,263,046	$876,497
A.1.d	Develop pre-flight risk analysis	$229,337	$214,333
A.1.d	Perform Risk Analysis	$2,405,803	$1,669,518
A.1.e	Develop medical personnel training	$18,326	$17,127
A.1.e	Maintain records of training for medical personnel	$29,748	$21,600
B.2.b	Overwater Equipment	$4,692,809	$3,335,346

All Federal Rules That May Duplicate, Overlap, or Conflict With the Rule

The FAA is unaware of any Federal rules that duplicate, overlap, or conflict with this rule.

Other Considerations

Affordability Analysis

For the purpose of this analysis, the degree to which small entities can afford the cost of the rule is predicated on the availability of financial resources. Costs can be paid from existing assets such as cash, by borrowing, through the provision of additional equity capital, by accepting reduced profits, by raising prices, or by finding other ways of offsetting costs.

One means of assessing the affordability is by determining the ability of each of the small entities to meet its short-term obligations by looking at net income, working capital and financial strength ratios. However, the FAA was unable to find this type of financial information for the affected entities, and so used an alternative way of analyzing affordability. The approach used by the FAA was to compare estimated revenues with the annualized compliance costs.

The average ratio of annualized costs to estimated annual revenues for small air ambulance operators ranges from 1.80% percent to 1.87 percent. Thus, the FAA expects that small air ambulance operators will not have trouble affording this rule.

Competitiveness Analysis

For small air ambulance operators, the average ratio of annualized cost to estimated annual revenue ranges from 1.80 percent to 1.87 percent. For large air ambulance operators, it ranges from 0.90 percent to 1.94 percent. For 33 out of the 38 large air ambulance operators, it ranges from 1.74 percent to 1.94 percent. The FAA expects that, based on these overlapping results, there will be no change in the competitiveness of these 33 small air ambulance operators with large air ambulance operators. However, for the remaining 5 large operators, the average ratio of annualized compliance cost to estimated annual revenue ranges from 0.90 percent to 0.93 percent, and this gives them a competitive advantage over small air ambulance operators.

Alternatives

Alternative One—This alternative considers excluding the Helicopter Terrain Awareness and Warning Systems (HTAWS) unit from the rulemaking. Although this alternative would reduce the ratio of annualized compliance cost to annual revenue from a range of 1.80 percent to 1.87 percent to a range of 1.61 percent to 1.68 percent, there would also be a significant reduction in safety.

Conclusion—The HTAWS is a tool for situational awareness and for helping helicopter air ambulance pilots during night operations. This equipment enhances situational awareness in all aspects of flying including day or night flight, and flight in instrument meteorological conditions. The FAA believes that this equipment is a significant safety enhancement for all aspects of helicopter operations. The accident data shows that the HTAWS provision could have prevented many air ambulance accidents if this equipment had been installed in the helicopter. Also, HTAWS is a Congressional mandate under Public Law 112–95. The Act requires the FAA to conduct rulemaking on helicopter air ambulance operations to address ''safety-enhancing technology and equipment, including HTAWS. . . .'' Thus the FAA does not consider excluding this requirement to be an acceptable alternative in accordance with 5 U.S.C. § 603(d).

Alternative Two—This alternative would affect the requirement for certificate holders engaged in helicopter air ambulance operations to have an OCC. The population affected would change from operators with 10 or more helicopters to those with 15 or more.

Conclusion—The FAA believes that operators with 10 or more helicopters engaged in air ambulance operations comprise 83 percent of the total air ambulance fleet in the U.S. The FAA believes that changing the requirement to apply to operators with 15 or more helicopters would decrease the coverage of the population to 78 percent. Furthermore, the complexity of operations considerably increases for operators of 10 or more helicopters. Thus the FAA does not consider this to be an acceptable alternative in accordance with 5 U.S.C. 603(d).

Minimizing the Burden on Small Entities

The Regulatory Flexibility Act requires agencies to consider the impact of their regulatory proposals on small entities and to analyze one or more significant alternatives to minimize the rule's burden on small entities. The FAA analyzed two alternatives to minimize the burden on small entities. We considered excluding the HTAWS unit requirement from the final rule. Next, we considered increasing the number of helicopters required to trigger the OCC requirement to 15. The FAA, however, did not consider these to be acceptable alternatives due to the significant enhancement for safety that HTAWS provides to helicopter operations. Therefore, the FAA did not adopt this alternative.

Conclusion

This rule will have a significant economic impact on a substantial number of small air ambulance operators. The FAA identified 35 small air ambulance operators on which the rule will have a significant economic impact.

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 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 final rule and determined the regulations will improve safety, which is a legitimate domestic objective and therefore not an unnecessary obstacle to foreign commerce.

E. Unfunded Mandates Assessment

Title II of the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate in a proposed or final agency rule that may result in an expenditure of $100 million or more (in 1995 dollars) in any one year by State, local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a ''significant regulatory action.'' The FAA currently uses an inflation-adjusted value of $143.1 million in lieu of $100 million. This final rule does not contain such a mandate; therefore, the requirements of Title II of the Act do not apply.

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.

The final rule will impose the following new information collection requirements.

Private Sector Costs

(1) Require all rotorcraft used in part 135 operations to be equipped with radio altimeters (§ 135.160). Certificate holders may apply for a deviation from the requirement for helicopters in which a radio altimeter cannot physically be installed in the flight deck. Estimated number of applications for deviations from on-demand helicopters = 94. Estimated number of applications for air tour helicopters = 13. Time needed per deviation application = 1 hour. Salary of chief pilot = $79 per hour.

Radio Altimeters						
Year	Applications for on demand helicopters	Applications for air tour helicopters	Time for the Deviation	Total hours	Wage for chief pilot	Total Cost
1 2 3 4 5 6 7 8 9 10	94	13	1.00	107	$79	$8,453
Total				107		$8,453
Average per year				11		$845

(2) Establish VFR ceiling and visibility requirements for helicopter air ambulance operations conducted in class G airspace (§ 135.609). These operators may designate local flying areas. Certificate holders electing to do so would document the local flying area in a manner acceptable to the administrator. We estimate that 50 percent of the air ambulance operators will designate local flying areas.

Air ambulance operators = 73.

Air ambulance operators affected = 50%.

Time needed to develop local flying area = 2 hours.

Salary of chief pilot = $79 per hour.

Local Flying Area						
Year	Air ambulance operators	Affected	Hours to develop local flying area	Total hours	Wage for chief pilot	Total Cost
1 2 3 4 5 6 7 8 9 10	73	50%	2.00	73	$79	$5,767
Total				73		$5,767
Average per year				7		$577

(3) Require air ambulance operators to document the highest obstacle along the planned route prior to a VFR flight (§ 135.615). Affected operators must document the procedures for performing this task in their operations manuals.

Air Ambulance Helicopters = 1,073–1,371.

Air Ambulance operations per helicopter = 367 per year.

Flight planning time = 5 minutes per operation.

Salary of pilot = $75 per hour.

Year	Helicopters	Operations per year	Hours of flight planning	Total hours	Wage for pilot	Cost
1	1,073	367	0.08	34,457	$75	$2,584,253
2	1,103	367	0.08	35,420	$75	$2,656,507
3	1,133	367	0.08	36,383	$75	$2,728,760
4	1,164	367	0.08	37,379	$75	$2,803,421
5	1,196	367	0.08	38,407	$75	$2,880,491
6	1,229	367	0.08	39,466	$75	$2,959,970
7	1,263	367	0.08	40,558	$75	$3,041,857
8	1,298	367	0.08	41,682	$75	$3,126,152
9	1,334	367	0.08	42,838	$75	$3,212,856
10	1,371	367	0.08	44,026	$75	$3,301,968
Total				390,616		$29,296,235
Average per year				39,062		$2,929,624

(4) Require each certificate holder performing helicopter air ambulance operations to implement an FAA-approved pre-flight risk-analysis program documented in its operations manual (§ 135.617).

Air ambulance operators = 73.

Time for chief pilot to develop risk analysis program = 30 hours.

Time for clerk to develop risk analysis worksheet and insert program into operations manual = 30 hours.

Salary of chief pilot = $79 per hour.

Salary of clerk = $25 per hour.

Develop Pre-flight Risk Analysis Program								
Year	Air ambulance operators	Hours to develop risk analysis	Hours chief pilot	Hours Clerk	Total hours	Wage for chief pilot	Wage for clerk	Total Cost
1	73	60.00	2,190	2,190	4,380	$79	$25	$227,760
2								
3								
4								
5								
6								
7								
8								
9								
10								
Total					4,380			$227,760
Average per year					438			$22,776

(5) Require pilots in command to conduct a pre-flight risk analysis, including completion of a risk analysis worksheet before a helicopter air ambulance operation (§ 135.617).

Air Ambulance Helicopters = 1,073–1,371.

Air Ambulance operations per helicopter = 367 per year.

Flight planning time = 10 minutes per operation.

Salary of pilot = $75 per hour.

Perform Risk Analysis						
Year	Helicopters	Operations per year	Hours per risk analysis	Total hours	Wage for pilot	Cost
1	1,073	367	0.17	65,632	$75	$4,922,388
2	1,103	367	0.17	67,467	$75	$5,060,013
3	1,133	367	0.17	69,302	$75	$5,197,638
4	1,164	367	0.17	71,198	$75	$5,339,850
5	1,196	367	0.17	73,155	$75	$5,486,650
6	1,229	367	0.17	75,174	$75	$5,638,038
7	1,263	367	0.17	77,254	$75	$5,794,013
8	1,298	367	0.17	79,394	$75	$5,954,575
9	1,334	367	0.17	81,596	$75	$6,119,725
10	1,371	367	0.17	83,860	$75	$6,289,463
Total				744,031		$55,802,353
Average per year				74,403		$5,580,235

(6) Require operations control specialists to participate in the pre-flight risk analysis required by § 135.617, including acknowledging in writing the date and time the risk analysis was completed and that the flight can be conducted safely (§ 135.619).

Air Ambulance Helicopters operated by certificate holders with an OCC = 895–1,144.

Air Ambulance operations per helicopter = 367 per year.

Time spent by OCS per pilot's worksheet = 5 minutes.

Salary of operations control specialist (OCS) = $42 per hour.

Pilot's Worksheet						
Year	Helicopters	Operations per year	Hours per pilot's worksheet	Total hours	Wage for OCS	Cost
1	895	367	0.08	27,372	$42	$1,149,628
2	920	367	0.08	28,137	$42	$1,181,740
3	945	367	0.08	28,901	$42	$1,213,853
4	971	367	0.08	29,696	$42	$1,247,250
5	998	367	0.08	30,522	$42	$1,281,931
6	1,026	367	0.08	31,379	$42	$1,317,897
7	1,054	367	0.08	32,235	$42	$1,353,863
8	1,083	367	0.08	33,122	$42	$1,391,114
9	1,113	367	0.08	34,039	$42	$1,429,649
10	1,144	367	0.08	34,987	$42	$1,469,468
Total				310,390		$13,036,393
Average per year				31,039		$1,303,639

(7) Require certificate holders with 10 or more helicopter air ambulances to establish operational control centers and document operations control specialist duties and training in their operations manuals. (§ 135.619).

Operators that need to develop the OCS training = 13.

Operators that need to change their manuals = 2.

Time for chief pilot to develop OCS training = 60 hours.

Time for clerk to develop OCS training = 30 hours.

Time for chief pilot to change manual = 1 hour.

Time for clerk to change manual = 0.5 hour.

Salary of chief pilot = $79 per hour.

Salary of clerk = $25 per hour.

Develop OCS Training/Amendment to Existing Manual										
Year	Operators that need to develop the OCS training	Operators that only need to change their manuals	Hours for OCS Training	Hours for manual change	Hours chief pilot	Hours Clerk	Total hours	Wage for chief pilot	Wage for clerk	Total Cost
1	13	2	60.00	1.00	782	391	1,173	$79	$25	$71,553
2										
3										
4										
5										
6										
7										
8										
9										
10										
Total							1,173			$71,553
Average per year							117			$7,155

(8) Require certificate holders that do not currently have operations control centers but will be required to have them to retain records of the training given to operations control specialists (§ 135.619).

Operations control specialists = 119–152.

Time per OCS training record = 5 minutes.

Salary of clerk = $25 per hour.

Training Records for Operators without OCCs					
Year	OCS	Hours per OCS record	Total hours	Wage	Cost
1	119	0.08	10	$25	$248
2	125	0.08	10	$25	$260
3	125	0.08	10	$25	$260
4	130	0.08	11	$25	$271
5	130	0.08	11	$25	$271
6	136	0.08	11	$25	$283
7	141	0.08	12	$25	$294
8	147	0.08	12	$25	$306
9	147	0.08	12	$25	$306
10	152	0.08	13	$25	$317
Total			113		$2,816
Average per year			11		$282

(9) Require certificate holders with operations control centers to retain operations control specialist training records (§ 135.619).

Operations control specialists = 369–472.

Time per OCS training record = 5 minutes.

Salary of clerk = $25 per hour.

Training Records for Operators with OCCs					
Year	OCS	Hours per OCS record	Total hours	Wage	Cost
1	369	0.08	31	$25	$769
2	380	0.08	32	$25	$792
3	391	0.08	33	$25	$815
4	402	0.08	34	$25	$838
5	412	0.08	34	$25	$858
6	423	0.08	35	$25	$881
7	434	0.08	36	$25	$904
8	445	0.08	37	$25	$927
9	456	0.08	38	$25	$950
10	472	0.08	39	$25	$983
Total			349		$8,717
Average per year			35		$872

(10) Require that medical personnel on board helicopter air ambulance flights receive either a supplemental safety briefing or safety training in lieu of a pre-flight briefing (§ 135.621).

Affected air ambulance operators = 37.

Time for chief pilot to develop training = 10 hours.

Time for clerk to incorporate training into operations manual = 10 hours.

Salary of chief pilot = $79 per hour.

Salary of clerk = $25 per hour.

Develop Medical Personnel Training				
Year	Air ambulance operators	Hours/operator to develop medical personnel training	Total hours	Total Cost
1	37	10.00	365.00	$37,960
2				
3				
4				
5				
6				
7				
8				
9				
10				
Total			365.00	$37,960
Average per year				$3,796

(11) Certificate holders choosing the option to provide safety training would be required to retain training records for persons receiving the training (§ 135.621).

Medical personnel = 5,858.

Time per medical personnel training record = 5 minutes.

Training: every 24 calendar months.

Salary of clerk = $25 per hour.

Recordkeeping for Medical Personnel Training			
Year	Training Data to be maintained	Total hours	Total Cost
1	5,858	488	$12,204
2	0	0	$0
3	5,858	488	$12,204
4	0	0	$0
5	5,858	488	$12,204
6	0	0	$0
7	5,858	488	$12,204
8	0	0	$0
9	5,858	488	$12,204
10	0	0	$0
Total	29,290	2,441	$61,020
Average per year			$6,102

Note:

Operations control specialists would be subject to certificate holders' drug and alcohol testing programs (§§ 120.5, 120.15). The FAA believes that, because certificate holders currently administer and maintain records for drug and alcohol testing for other employees (approved under OMB Control Number 2120–0535), the cost for a clerical person to maintain the records would be negligible.

Summary of All Burden Hours and Costs

	Section	Total Burden Hours	Total Cost
1. Radio altimeters	135.160	107	$8,453
2. Local flying area	135.609	73	$5,767
3. VFR Flight Planning	135.615	390,616	$29,296,235
4. Develop pre-flight risk analysis program	135.617	4,380	$227,760
5. Perform risk analysis	135.617	744,031	$55,802,353
6. Pilot's worksheet	135.619	310,390	$13,036,393
7. Develop OCS training/amendment to existing manual	135.619	1,173	$71,553
8. Training records for operators without OCCs	135.619	113	$2,816
9. Training records for operators with OCCs	135.619	349	$8,717
10. Develop medical personnel training	135.621	365	$37,960
11. Recordkeeping for medical personnel training	135.621	2,441	$61,020
Grand Totals		1,454,038	$98,559,027
Average per year		145,404	$9,855,903

Cost to the Federal Government

(1) Radio altimeters for rotorcraft operations (§ 135.160).

Applications for deviations from radio altimeter requirement = 107.

Time needed for review and operations specification = 1.5 hour.

Salary of inspector at headquarters = $76 per hour.

Radio Altimeters					
Year	Applications	Time for review & OpSpecs	Total hours	Wage for inspector at headquarters	Total Cost
1 2 3 4 5 6 7 8 9 10	107	1.50	161	$76	$12,198
Total			161		$12,198
Average per year			16		$1,220

(2) Local Flying Area (§ 135.609).
Air ambulance operators = 73.
Air ambulance operators affected = 50%.
Time needed to review request = 1 hour.
Salary of inspector at field office = $48 per hour.

Local Flying Area						
Year	Air ambulance operators	Affected	Hours to review request	Total hours	Wage for inspector at field office	Total Cost
1 2 3 4 5 6 7 8 9 10	73	50%	1.00	37	$48	$1,752
Total				37		$1,752
Average per year				4		$175

(3) Review pre-flight risk analysis procedure and worksheet (§ 135.617).
Air ambulance operators = 73.
Time to review = 1 hour.
Salary of inspector at field office = $48 per hour.

Review Pre-flight Risk Analysis					
Year	Air ambulance operators	Hours to review	Total hours	Wage for inspector at field office	Total Cost
1	73	1.00	73	$48	$3,504
2					
3					
4					
5					
6					
7					
8					
9					
10					
Total			73		$3,504
Average per year			7		$350

(4) OCS training/amendment to existing manual (§ 135.619).

Operators = 15.
Time to review OCS training = 1 hour.
Salary of inspector at field office = $48 per hour.

Review OCS Training/Amendment to Existing Manual					
Year	Operators	Hours for OCS Training	Total hours	Wage for inspector at field office	Total Cost
1	15	1.00	15	$48	$720
2					
3					
4					
5					
6					
7					
8					
9					
10					
Total			15		$720
Average per year			2		$72

(5) Review Medical Personnel Training (§ 135.621).

Air ambulance operators = 73.
Time to review = 1 hour.
Salary of inspector at field office = $48 per hour.

Review Development of Medical Personnel Training				
Year	Air ambulance operators	Hours/operator to review development of medical personnel training	Total hours	Total Cost
1	73	1.00	73.00	$3,504
2				
3				
4				
5				
6				
7				
8				
9				
10				
Total			73.00	$3,504
Average per year				$350

Summary of All Burden Hours and Costs Over 10 Year Period

	Section	Total Burden Hours	Total Cost
1. Radio altimeters	135.160	161	$12,198
2. Local flying area	135.609	37	$1,752
3. Review pre-flight risk analysis	135.617	73	$3,504
4. Review OCS training/amendment to existing manual	135.619	15	$720
5. Review development of medical personnel training	135.621	73	$3,504
Grand Totals		358	$21,678
Average per year		36	$2,168

As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), the FAA has submitted these information collection amendments to OMB for its review. Notice of OMB approval for this information collection will be published in a future **Federal Register** document.

G. International Compatibility and Cooperation

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to conform to ICAO Standards and Recommended Practices to the maximum extent practicable. The FAA has reviewed the corresponding ICAO Standards and Recommended Practices and has identified the following differences.

ICAO Annex 6 Part III, Section II, Chapter 4 sets standards for helicopter overwater equipment requirements based on performance class and distance from land based on time at normal cruise speed. The FAA did not adopt this requirement but instead bases the rule on existing FAA helicopter performance criteria and distances from shore.

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 Executive Order 13609, and has determined that this action would have no effect on international regulatory cooperation.

H. Environmental Analysis

FAA Order 1050.1E identifies FAA actions that are categorically excluded from preparation of an environmental assessment or environmental impact statement under the National Environmental Policy Act in the absence of extraordinary circumstances. The FAA has determined this rulemaking action qualifies for the categorical exclusion identified in paragraph 312f. Additionally, the FAA reviewed paragraph 304 of Order 1050.1E and determined that this rulemaking involves no extraordinary circumstances.

I. Regulations Affecting Intrastate Aviation in Alaska

Section 1205 of the FAA Reauthorization Act of 1996 (110 Stat. 3213) requires the FAA, when modifying its regulations 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. In the NPRM, the FAA requested comments on whether the proposed rule should apply differently to intrastate operations in Alaska.

The agency received comments pertaining to this rule's application in Alaska which are discussed in sections III.C.1 (the radio altimeter requirement) and III.C.3 (pilot testing on recovery from inadvertent flight into IMC, flat-light, whiteout, and brownout conditions) of this final rule document. To the requirement for a radio altimeter, NorthStar Trekking commented that this equipment can give erroneous readings on snow-covered surfaces. In response, as discussed in III.C.1, the FAA has determined that the safety benefits of this equipment outweigh the possibility of infrequent inaccurate readings. In response to the comment about pilot testing, the FAA reiterates that pilots will benefit from demonstrating knowledge of procedures for aircraft handling in all three conditions, because these conditions may occur year-round in many places. As a result, the agency has determined that there is no need to make any regulatory distinctions applicable to intrastate aviation in Alaska.

V. Executive Order Determinations

A. Executive Order 13132, Federalism

The FAA has analyzed this final rule under the principles and criteria of Executive Order 13132, Federalism. The agency determined that this action will 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, does not have Federalism implications.

B. Executive Order 13211, Regulations That Significantly Affect Energy Supply, Distribution, or Use

The FAA analyzed this final rule under Executive Order 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use (May 18, 2001). The agency has determined that it is not a ''significant energy action'' under the executive order and it is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

VI. How To Obtain Additional Information

A. Rulemaking Documents

An electronic copy of a rulemaking document may be obtained by using the Internet—

1. Search the Federal eRulemaking Portal (*http://www.regulations.gov*);
2. Visit the FAA's Regulations and Policies Web page at *http://www.faa.gov/regulations_policies/* or
3. Access the Government Printing Office's Web page at *http://www.gpo.gov/fdsys.*

Copies may also be obtained by sending a request (identified by notice, amendment, or docket number of this rulemaking) to the Federal Aviation Administration, Office of Rulemaking, ARM–1, 800 Independence Avenue SW., Washington, DC 20591, or by calling (202) 267–9680.

B. Comments Submitted to the Docket

Comments received may be viewed by going to *http://www.regulations.gov* and following the online instructions to search the docket number for this action. Anyone is able to search the electronic form of all comments received into any of the FAA's dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.).

C. Small Business Regulatory Enforcement Fairness Act

The Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 requires 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 *http://www.faa.gov/regulations_policies/rulemaking/sbre_act/.*

List of Subjects

14 CFR Part 91

Aircraft, Airmen, Aviation safety, Reporting and recordkeeping requirements.

14 CFR Part 120

Airmen, Alcohol abuse, Alcoholism, Alcohol testing, Aviation safety, Drug abuse, Drug testing, Operators, Reporting and recordkeeping requirements, Safety, Safety-sensitive, Transportation.

14 CFR Part 135

Air taxis, Aircraft, Airmen, Aviation safety, Incorporation by reference, Reporting and recordkeeping requirements.

The Amendment

In consideration of the foregoing, the Federal Aviation Administration amends chapter I of title 14, Code of Federal Regulations, as follows:

PART 91—GENERAL OPERATING AND FLIGHT RULES

■ 1. Revise the authority citation for part 91 to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 1155, 40103, 40113, 40120, 44101, 44111, 44701, 44704, 44709, 44711, 44712, 44715, 44716, 44717, 44722, 46306, 46315, 46316, 46504, 46506–46507, 47122, 47508, 47528–47531, articles 12 and 29 of the Convention on International Civil Aviation (61 Stat. 1180).

■ 2. Amend § 91.155 by revising paragraphs (a) and (b)(1) to read as follows:

§ 91.155 Basic VFR weather minimums.

(a) Except as provided in paragraph (b) of this section and § 91.157, no person may operate an aircraft under VFR when the flight visibility is less, or at a distance from clouds that is less, than that prescribed for the corresponding altitude and class of airspace in the following table:

Airspace	Flight visibility	Distance from clouds
Class A	Not Applicable	Not Applicable.
Class B	3 statute miles	Clear of Clouds.
Class C	3 statute miles	500 feet below.
		1,000 feet above.
		2,000 feet horizontal.
Class D	3 statute miles	500 feet below.
		1,000 feet above.
		2,000 feet horizontal.
Class E:		
Less than 10,000 feet MSL	3 statute miles	500 feet below.

Airspace	Flight visibility	Distance from clouds
		1,000 feet above.
		2,000 feet horizontal.
At or above 10,000 feet MSL	5 statute miles	1,000 feet below.
		1,000 feet above.
		1 statute mile horizontal.
Class G:		
1,200 feet or less above the surface (regardless of MSL altitude)		
For aircraft other than helicopters:		
Day, except as provided in § 91.155(b)	1 statute mile	Clear of clouds.
Night, except as provided in § 91.155(b)	3 statute miles	500 feet below.
		1,000 feet above.
		2,000 feet horizontal.
For helicopters:		
Day, except as provided in § 91.155(b)	½ statute mile	Clear of clouds.
Night, except as provided in § 91.155(b)	1 statute mile	Clear of clouds.
More than 1,200 feet above the surface but less than 10,000 feet MSL		
Day	1 statute mile	500 feet below.
		1,000 feet above.
		2,000 feet horizontal.
Night	3 statute miles	500 feet below.
		1,000 feet above.
		2,000 feet horizontal.
More than 1,200 feet above the surface and at or above 10,000 feet MSL.	5 statute miles	1,000 feet below.
		1,000 feet above.
		1 statute mile horizontal.

(b) * * *

(1) *Helicopter.* A helicopter may be operated clear of clouds in an airport traffic pattern within ½ mile of the runway or helipad of intended landing if the flight visibility is not less than ½ statute mile.

* * * * *

PART 120—DRUG AND ALCOHOL TESTING PROGRAM

■ 3. The authority citation for part 120 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40101–40103, 40113, 40120, 41706, 41721, 44106, 44701, 44702, 44703, 44709, 44710, 44711, 45101–45105, 46105, 46306.

■ 4. Amend § 120.105 by adding paragraph (i) to read as follows:

§ 120.105 Employees who must be tested.

* * * * *

(i) Operations control specialist duties.

■ 5. Amend § 120.215 by adding paragraph (a)(9) to read as follows:

§ 120.215 Covered employees.

(a) * * *

(9) Operations control specialist duties.

* * * * *

PART 135—OPERATING REQUIREMENTS: COMMUTER AND ON DEMAND OPERATIONS AND RULES GOVERNING PERSONS ON BOARD SUCH AIRCRAFT

■ 6. The authority citation for part 135 is revised to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 41706, 40113, 44701–44702, 44705, 44709, 44711–44713, 44715–44717, 44722, 44730, 45101–45105; Pub. L. 112–95, 126 Stat. 58 (49 U.S.C. 44730).

■ 7. Amend § 135.1 by adding paragraph (a)(9) to read as follows:

§ 135.1 Applicability.

(a) * * *

(9) Helicopter air ambulance operations as defined in § 135.601(b)(1).

* * * * *

■ 8. Amend § 135.117 by adding paragraph (a)(9) to read as follows:

§ 135.117 Briefing of passengers before flight.

(a) * * *

(9) If a rotorcraft operation involves flight beyond autorotational distance from the shoreline, as defined in § 135.168(a), use of life preservers, ditching procedures and emergency exit from the rotorcraft in the event of a ditching; and the location and use of life rafts and other life preserver devices if applicable.

* * * * *

■ 9. Add § 135.160 to read as follows:

§ 135.160 Radio altimeters for rotorcraft operations.

(a) After April 24, 2017, no person may operate a rotorcraft unless that rotorcraft is equipped with an operable FAA-approved radio altimeter, or an FAA-approved device that incorporates a radio altimeter, unless otherwise authorized in the certificate holder's approved minimum equipment list.

(b) Deviation authority. The Administrator may authorize deviations from paragraph (a) of this section for rotorcraft that are unable to incorporate a radio altimeter. This deviation will be issued as a Letter of Deviation Authority. The deviation may be terminated or amended at any time by the Administrator. The request for deviation authority is applicable to rotorcraft with a maximum gross takeoff weight no greater than 2,950 pounds. The request for deviation authority must contain a complete statement of the circumstances and justification, and must be submitted to the nearest Flight Standards District Office, not less than 60 days prior to the date of intended operations.

■ 10. Add § 135.168 to read as follows:

§ 135.168 Emergency equipment: Overwater rotorcraft operations.

(a) *Definitions.* For the purposes of this section, the following definitions apply—

Autorotational distance refers to the distance a rotorcraft can travel in autorotation as described by the

manufacturer in the approved Rotorcraft Flight Manual.

Shoreline means that area of the land adjacent to the water of an ocean, sea, lake, pond, river, or tidal basin that is above the high-water mark at which a rotorcraft could be landed safely. This does not include land areas which are unsuitable for landing such as vertical cliffs or land intermittently under water.

(b) *Required equipment.* After April 24, 2017, except as provided for in paragraph (c), when authorized by the certificate holder's operations specifications, or when necessary only for takeoff or landing, no person may operate a rotorcraft beyond autorotational distance from the shoreline unless it carries:

(1) An approved life preserver equipped with an approved survivor locator light for each occupant of the rotorcraft. The life preserver must be worn by each occupant while the rotorcraft is beyond autorotational distance from the shoreline, except for a patient transported during a helicopter air ambulance operation, as defined in § 135.601(b)(1), when wearing a life preserver would be inadvisable for medical reasons; and

(2) An approved and installed 406 MHz emergency locator transmitter (ELT) with 121.5 MHz homing capability. Batteries used in ELTs must be maintained in accordance with the following—

(i) Non-rechargeable batteries must be replaced when the transmitter has been in use for more than 1 cumulative hour or when 50% of their useful lives have expired, as established by the transmitter manufacturer under its approval. The new expiration date for replacing the batteries must be legibly marked on the outside of the transmitter. The battery useful life requirements of this paragraph (b)(2) do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals; or

(ii) Rechargeable batteries used in the transmitter must be recharged when the transmitter has been in use for more than 1 cumulative hour or when 50% of their useful-life-of-charge has expired, as established by the transmitter manufacturer under its approval. The new expiration date for recharging the batteries must be legibly marked on the outside of the transmitter. The battery useful-life-of-charge requirements of this paragraph (b)(2) do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.

(c) *Maintenance.* The equipment required by this section must be maintained in accordance with § 135.419.

(d) *ELT standards.* The ELT required by paragraph (b)(2) of this section must meet the requirements in:

(1) TSO–C126, TSO–C126a, or TSO–C126b; and

(2) Section 2 of either RTCA DO–204 or RTCA DO–204A, as specified by the TSO complied with in paragraph (d)(1) of this section.

(e) *ELT alternative compliance.* Operators with an ELT required by paragraph (b)(2) of this section, or an ELT with an approved deviation under § 21.618 of this chapter, are in compliance with this section.

(f) *Incorporation by reference.* The standards required in this section are incorporated by reference into this section with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the FAA must publish notice of change in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at the FAA's Office of Rulemaking (ARM–1), 800 Independence Avenue SW., Washington, DC 20591 (telephone (202) 267–9677) and from the sources indicated below. It is also available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call (202) 741–6030 or go to *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

(1) 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. Copies are also available on the FAA's Web site. Use the following link and type the TSO number in the search box: *http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgTSO.nsf/Frameset?OpenPage.*

(i) TSO–C126, 406 MHz Emergency Locator Transmitter (ELT), Dec. 23, 1992,

(ii) TSO–C126a, 406 MHz Emergency Locator Transmitter (ELT), Dec. 17, 2008, and

(iii) TSO–C126b, 406 MHz Emergency Locator Transmitter (ELT), Nov. 26, 2012.

(2) RTCA, Inc., 1150 18th Street NW., Suite 910, Washington, DC 20036, telephone (202) 833–9339, and are also available on RTCA's Web site at *http://www.rtca.org/onlinecart/index.cfm.*

(i) RTCA DO–204, Minimum Operational Performance Standards (MOPS) 406 MHz Emergency Locator Transmitters (ELTs), Sept. 29, 1989, and

(ii) RTCA DO–204A, Minimum Operational Performance Standards (MOPS) 406 MHz Emergency Locator Transmitters (ELT), Dec. 6, 2007.

■ 11. Revise § 135.221 to read as follows:

§ 135.221 IFR: Alternate airport weather minimums.

(a) *Aircraft other than rotorcraft.* No person may designate an alternate airport unless the weather reports or forecasts, or any combination of them, indicate that the weather conditions will be at or above authorized alternate airport landing minimums for that airport at the estimated time of arrival.

(b) *Rotorcraft.* Unless otherwise authorized by the Administrator, no person may include an alternate airport in an IFR flight plan unless appropriate weather reports or weather forecasts, or a combination of them, indicate that, at the estimated time of arrival at the alternate airport, the ceiling and visibility at that airport will be at or above the following weather minimums—

(1) If, for the alternate airport, an instrument approach procedure has been published in part 97 of this chapter or a special instrument approach procedure has been issued by the FAA to the certificate holder, the ceiling is 200 feet above the minimum for the approach to be flown, and visibility is at least 1 statute mile but never less than the minimum visibility for the approach to be flown.

(2) If, for the alternate airport, no instrument approach procedure has been published in part 97 of this chapter and no special instrument approach procedure has been issued by the FAA to the certificate holder, the ceiling and visibility minimums are those allowing descent from the minimum enroute altitude (MEA), approach, and landing under basic VFR.

■ 12. Amend § 135.293 by—

■ a. Removing the word ''and'' from the end of paragraph (a)(7)(iii);

■ b. Removing the period and adding ''; and'' in its place at the end of paragraph (a)(8);

■ c. Adding paragraph (a)(9);

■ d. Redesignating paragraphs (c) through (f) as paragraphs (d) through (g) respectively; and

■ e. Adding new paragraph (c).

The additions read as follows:

§ 135.293 Initial and recurrent pilot testing requirements.

(a) * * *

(9) After the next scheduled competency check after April 22, 2014

for rotorcraft pilots, procedures for aircraft handling in flat-light, whiteout, and brownout conditions, including methods for recognizing and avoiding those conditions.

* * * * *

(c) Each competency check given in a rotorcraft must include a demonstration of the pilot's ability to maneuver the rotorcraft solely by reference to instruments. The check must determine the pilot's ability to safely maneuver the rotorcraft into visual meteorological conditions following an inadvertent encounter with instrument meteorological conditions. For competency checks in non-IFR-certified rotorcraft, the pilot must perform such maneuvers as are appropriate to the rotorcraft's installed equipment, the certificate holder's operations specifications, and the operating environment.

* * * * *

§ 135.297 [Amended]

■ 13. Amend § 135.297 by removing the reference to ''§ 135.293(d)'' and adding ''§ 135.293(e)'' in its place in the last sentence of paragraph (c) introductory text.

■ 14. Add subpart L to part 135 to read as follows:

Subpart L—Helicopter Air Ambulance Equipment, Operations, and Training Requirements

Sec.

135.601 Applicability and definitions.
135.603 Pilot-in-command instrument qualifications.
135.605 Helicopter terrain awareness and warning system (HTAWS).
135.607 Flight Data Monitoring System.
135.609 VFR ceiling and visibility requirements for Class G airspace.
135.611 IFR operations at locations without weather reporting.
135.613 Approach/departure IFR transitions.
135.615 VFR flight planning.
135.617 Pre-flight risk analysis.
135.619 Operations control centers.
135.621 Briefing of medical personnel.

Subpart L—Helicopter Air Ambulance Equipment, Operations, and Training Requirements

§ 135.601 Applicability and definitions.

(a) *Applicability.* This subpart prescribes the requirements applicable to each certificate holder conducting helicopter air ambulance operations.

(b) *Definitions.* For purposes of this subpart, the following definitions apply:

(1) *Helicopter air ambulance operation* means a flight, or sequence of flights, with a patient or medical personnel on board, for the purpose of medical transportation, by a part 135 certificate holder authorized by the Administrator to conduct helicopter air ambulance operations. A helicopter air ambulance operation includes, but is not limited to—

(i) Flights conducted to position the helicopter at the site at which a patient or donor organ will be picked up.

(ii) Flights conducted to reposition the helicopter after completing the patient, or donor organ transport.

(iii) Flights initiated for the transport of a patient or donor organ that are terminated due to weather or other reasons.

(2) *Medical personnel* means a person or persons with medical training, including but not limited to flight physicians, flight nurses, or flight paramedics, who are carried aboard a helicopter during helicopter air ambulance operations in order to provide medical care.

(3) *Mountainous* means designated mountainous areas as listed in part 95 of this chapter.

(4) *Nonmountainous* means areas other than mountainous areas as listed in part 95 of this chapter.

§ 135.603 Pilot-in-command instrument qualifications.

After April 24, 2017, no certificate holder may use, nor may any person serve as, a pilot in command of a helicopter air ambulance operation unless that person meets the requirements of § 135.243 and holds a helicopter instrument rating or an airline transport pilot certificate with a category and class rating for that aircraft, that is not limited to VFR.

§ 135.605 Helicopter terrain awareness and warning system (HTAWS).

(a) After April 24, 2017, no person may operate a helicopter in helicopter air ambulance operations unless that helicopter is equipped with a helicopter terrain awareness and warning system (HTAWS) that meets the requirements in TSO–C194 and Section 2 of RTCA DO–309.

(b) The certificate holder's Rotorcraft Flight Manual must contain appropriate procedures for—

(1) The use of the HTAWS; and

(2) Proper flight crew response to HTAWS audio and visual warnings.

(c) Certificate holders with HTAWS required by this section with an approved deviation under § 21.618 of this chapter are in compliance with this section.

(d) The standards required in this section are incorporated by reference into this section with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the FAA must publish notice of change in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at the FAA's Office of Rulemaking (ARM–1), 800 Independence Avenue SW., Washington, DC 20591 (telephone (202) 267–9677) and from the sources indicated below. It is also available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call (202) 741–6030 or go to *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

(1) 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. Copies are also available on the FAA's Web site. Use the following link and type the TSO number in the search box: *http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgTSO.nsf/Frameset?OpenPage.*

(i) TSO C–194, Helicopter Terrain Awareness and Warning System (HTAWS), Dec. 17, 2008.

(ii) [Reserved]

(2) RTCA, Inc., 1150 18th Street NW., Suite 910, Washington, DC 20036, telephone (202) 833–9339, and are also available on RTCA's Web site at *http://www.rtca.org/onlinecart/index.cfm.*

(i) RTCA DO–309, Minimum Operational Performance Standards (MOPS) for Helicopter Terrain Awareness and Warning System (HTAWS) Airborne Equipment, Mar. 13, 2008.

(ii) [Reserved]

§ 135.607 Flight Data Monitoring System.

After April 23, 2018, no person may operate a helicopter in air ambulance operations unless it is equipped with an approved flight data monitoring system capable of recording flight performance data. This system must:

(a) Receive electrical power from the bus that provides the maximum reliability for operation without jeopardizing service to essential or emergency loads, and

(b) Be operated from the application of electrical power before takeoff until the removal of electrical power after termination of flight.

§ 135.609 VFR ceiling and visibility requirements for Class G airspace.

(a) Unless otherwise specified in the certificate holder's operations specifications, when conducting

helicopter air ambulance operations in Class G airspace, the weather minimums in the following table apply:

Location	Day		Night		Night using an Approved NVIS or HTAWS	
	Ceiling	Flight Visibility	Ceiling	Flight Visibility	Ceiling	Flight Visibility
Nonmountainous local flying areas	800-feet	2 statute miles	1,000-feet	3 statute miles	800-feet	3 statute miles
Nonmountainous non-local flying areas	800-feet	3 statute miles	1,000-feet	5 statute miles	1,000-feet	3 statute miles
Mountainous local flying areas	800-feet	3 statute miles	1,500-feet	3 statute miles	1,000-feet	3 statute miles
Mountainous non-local flying areas	1,000-feet	3 statute miles	1,500-feet	5 statute miles	1,000-feet	5 statute miles

(b) A certificate holder may designate local flying areas in a manner acceptable to the Administrator, that must—

(1) Not exceed 50 nautical miles in any direction from each designated location;

(2) Take into account obstacles and terrain features that are easily identifiable by the pilot in command and from which the pilot in command may visually determine a position; and

(3) Take into account the operating environment and capabilities of the certificate holder's helicopters.

(c) A pilot must demonstrate a level of familiarity with the local flying area by passing an examination given by the certificate holder within the 12 calendar months prior to using the local flying area.

§ 135.611 IFR operations at locations without weather reporting.

(a) If a certificate holder is authorized to conduct helicopter IFR operations, the Administrator may authorize the certificate holder to conduct IFR helicopter air ambulance operations at airports with an instrument approach procedure and at which a weather report is not available from the U.S. National Weather Service (NWS), a source approved by the NWS, or a source approved by the FAA, subject to the following limitations:

(1) The certificate holder must obtain a weather report from a weather reporting facility operated by the NWS, a source approved by the NWS, or a source approved by the FAA, that is located within 15 nautical miles of the airport. If a weather report is not available, the certificate holder may obtain the area forecast from the NWS, a source approved by the NWS, or a source approved by the FAA, for information regarding the weather observed in the vicinity of the airport;

(2) Flight planning for IFR flights conducted under this paragraph must include selection of an alternate airport that meets the requirements of §§ 135.221 and 135.223;

(3) In Class G airspace, IFR departures are authorized only after the pilot in command determines that the weather conditions at the departure point are at or above VFR minimums in accordance with § 135.609; and

(4) All approaches must be conducted at Category A approach speeds as established in part 97 or those required for the type of approach being used.

(b) Each helicopter air ambulance operated under this section must be equipped with functioning severe weather detection equipment.

(c) Pilots conducting operations pursuant to this section may use the weather information obtained in paragraph (a) to satisfy the weather report and forecast requirements of § 135.213 and § 135.225(a).

(d) After completing a landing at the airport at which a weather report is not available, the pilot in command is authorized to determine if the weather meets the takeoff requirements of part 97 of this chapter or the certificate holder's operations specification, as applicable.

§ 135.613 Approach/departure IFR transitions.

(a) *Approaches.* When conducting an authorized instrument approach and transitioning from IFR to VFR flight, upon transitioning to VFR flight the following weather minimums apply—

(1) For Point-in-Space (PinS) Copter Instrument approaches annotated with a ''Proceed VFR'' segment, if the distance from the missed approach point to the landing area is 1 NM or less, flight visibility must be at least 1 statute mile and the ceiling on the approach chart applies;

(2) For all instrument approaches, including PinS when paragraph (a)(1) of this section does not apply, if the distance from the missed approach point to the landing area is 3 NM or less, the applicable VFR weather minimums are—

(i) For Day Operations: No less than a 600-foot ceiling and 2 statute miles flight visibility;

(ii) For Night Operations: No less than a 600-foot ceiling and 3 statute miles flight visibility; or

(3) For all instrument approaches, including PinS, if the distance from the missed approach point to the landing area is greater than 3 NM, the VFR weather minimums required by the class of airspace.

(b) *Departures.* For transitions from VFR to IFR upon departure—

(1) The VFR weather minimums of paragraph (a) of this section apply if—

(i) An FAA-approved obstacle departure procedure is followed; and

(ii) An IFR clearance is obtained on or before reaching a predetermined

location that is not more than 3 NM from the departure location.

(2) If the departure does not meet the requirements of paragraph (b)(1) of this section, the VFR weather minimums required by the class of airspace apply.

§ 135.615 VFR flight planning.

(a) *Pre-flight.* Prior to conducting VFR operations, the pilot in command must—

(1) Determine the minimum safe cruise altitude by evaluating the terrain and obstacles along the planned route of flight;

(2) Identify and document the highest obstacle along the planned route of flight; and

(3) Using the minimum safe cruise altitudes in paragraphs (b)(1)–(2) of this section, determine the minimum required ceiling and visibility to conduct the planned flight by applying the weather minimums appropriate to the class of airspace for the planned flight.

(b) *Enroute.* 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:

(1) 300 feet for day operations.

(2) 500 feet for night operations.

(c) *Rerouting the planned flight path.* A pilot in command may deviate from the planned flight path for reasons such as weather conditions or operational considerations. Such deviations do not relieve the pilot in command of the weather requirements or the requirements for terrain and obstacle clearance contained in this part and in part 91 of this chapter. Rerouting, change in destination, or other changes to the planned flight that occur while the helicopter is on the ground at an intermediate stop require evaluation of the new route in accordance with paragraph (a) of this section.

(d) *Operations manual.* Each certificate holder must document its VFR flight planning procedures in its operations manual.

§ 135.617 Pre-flight risk analysis.

(a) Each certificate holder conducting helicopter air ambulance operations must establish, and document in its operations manual, an FAA-approved preflight risk analysis that includes at least the following—

(1) Flight considerations, to include obstacles and terrain along the planned route of flight, landing zone conditions, and fuel requirements;

(2) Human factors, such as crew fatigue, life events, and other stressors;

(3) Weather, including departure, en route, destination, and forecasted;

(4) A procedure for determining whether another helicopter air ambulance operator has refused or rejected a flight request; and

(5) Strategies and procedures for mitigating identified risks, including procedures for obtaining and documenting approval of the certificate holder's management personnel to release a flight when a risk exceeds a level predetermined by the certificate holder.

(b) Each certificate holder must develop a preflight risk analysis worksheet to include, at a minimum, the items in paragraph (a) of this section.

(c) Prior to the first leg of each helicopter air ambulance operation, the pilot in command must conduct a preflight risk analysis and complete the preflight risk analysis worksheet in accordance with the certificate holder's FAA-approved procedures. The pilot in command must sign the preflight risk analysis worksheet and specify the date and time it was completed.

(d) The certificate holder must retain the original or a copy of each completed preflight risk analysis worksheet at a location specified in its operations manual for at least 90 days from the date of the operation.

§ 135.619 Operations control centers.

(a) *Operations control center.* After April 22, 2016, certificate holders authorized to conduct helicopter air ambulance operations, with 10 or more helicopter air ambulances assigned to the certificate holder's operations specifications, must have an operations control center. The operations control center must be staffed by operations control specialists who, at a minimum—

(1) Provide two-way communications with pilots;

(2) Provide pilots with weather briefings, to include current and forecasted weather along the planned route of flight;

(3) Monitor the progress of the flight; and

(4) Participate in the preflight risk analysis required under § 135.617 to include the following:

(i) Ensure the pilot has completed all required items on the preflight risk analysis worksheet;

(ii) Confirm and verify all entries on the preflight risk analysis worksheet;

(iii) Assist the pilot in mitigating any identified risk prior to takeoff; and

(iv) Acknowledge in writing, specifying the date and time, that the preflight risk analysis worksheet has been accurately completed and that, according to their professional judgment, the flight can be conducted safely.

(b) *Operations control center staffing.* Each certificate holder conducting helicopter air ambulance operations must provide enough operations control specialists at each operations control center to ensure the certificate holder maintains operational control of each flight.

(c) *Documentation of duties and responsibilities.* Each certificate holder must describe in its operations manual the duties and responsibilities of operations control specialists, including preflight risk mitigation strategies and control measures, shift change checklist, and training and testing procedures to hold the position, including procedures for retesting.

(d) *Training requirements.* No certificate holder may use, nor may any person perform the duties of, an operations control specialist unless the operations control specialist has satisfactorily completed the training requirements of this paragraph.

(1) *Initial training.* Before performing the duties of an operations control specialist, each person must satisfactorily complete the certificate holder's FAA-approved operations control specialist initial training program and pass an FAA-approved knowledge and practical test given by the certificate holder. Initial training must include a minimum of 80 hours of training on the topics listed in paragraph (f) of this section. A certificate holder may reduce the number of hours of initial training to a minimum of 40 hours for persons who have obtained, at the time of beginning initial training, a total of at least 2 years of experience during the last 5 years in any one or in any combination of the following areas—

(i) In military aircraft operations as a pilot, flight navigator, or meteorologist;

(ii) In air carrier operations as a pilot, flight engineer, certified aircraft dispatcher, or meteorologist; or

(iii) In aircraft operations as an air traffic controller or a flight service specialist.

(2) *Recurrent training.* Every 12 months after satisfactory completion of the initial training, each operations control specialist must complete a minimum of 40 hours of recurrent training on the topics listed in paragraph (f) of this section and pass an FAA-approved knowledge and practical test given by the certificate holder on those topics.

(e) *Training records.* The certificate holder must maintain a training record for each operations control specialist employed by the certificate holder for the duration of that individual's employment and for 90 days thereafter.

The training record must include a chronological log for each training course, including the number of training hours and the examination dates and results.

(f) *Training topics.* Each certificate holder must have an FAA-approved operations control specialist training program that covers at least the following topics—

(1) Aviation weather, including:

(i) General meteorology;

(ii) Prevailing weather;

(iii) Adverse and deteriorating weather;

(iv) Windshear;

(v) Icing conditions;

(vi) Use of aviation weather products;

(vii) Available sources of information; and

(viii) Weather minimums;

(2) Navigation, including:

(i) Navigation aids;

(ii) Instrument approach procedures;

(iii) Navigational publications; and

(iv) Navigation techniques;

(3) Flight monitoring, including:

(i) Available flight-monitoring procedures; and

(ii) Alternate flight-monitoring procedures;

(4) Air traffic control, including:

(i) Airspace;

(ii) Air traffic control procedures;

(iii) Aeronautical charts; and

(iv) Aeronautical data sources;

(5) Aviation communication, including:

(i) Available aircraft communications systems;

(ii) Normal communication procedures;

(iii) Abnormal communication procedures; and

(iv) Emergency communication procedures;

(6) Aircraft systems, including:

(i) Communications systems;

(ii) Navigation systems;

(iii) Surveillance systems;

(iv) Fueling systems;

(v) Specialized systems;

(vi) General maintenance requirements; and

(vii) Minimum equipment lists;

(7) Aircraft limitations and performance, including:

(i) Aircraft operational limitations;

(ii) Aircraft performance;

(iii) Weight and balance procedures and limitations; and

(iv) Landing zone and landing facility requirements;

(8) Aviation policy and regulations, including:

(i) 14 CFR Parts 1, 27, 29, 61, 71, 91, and 135;

(ii) 49 CFR Part 830;

(iii) Company operations specifications;

(iv) Company general operations policies;

(v) Enhanced operational control policies;

(vi) Aeronautical decision making and risk management;

(vii) Lost aircraft procedures; and

(viii) Emergency and search and rescue procedures, including plotting coordinates in degrees, minutes, seconds format, and degrees, decimal minutes format;

(9) Crew resource management, including:

(i) Concepts and practical application;

(ii) Risk management and risk mitigation; and

(iii) Pre-flight risk analysis procedures required under § 135.617;

(10) Local flying area orientation, including:

(i) Terrain features;

(ii) Obstructions;

(iii) Weather phenomena for local area;

(iv) Airspace and air traffic control facilities;

(v) Heliports, airports, landing zones, and fuel facilities;

(vi) Instrument approaches;

(vii) Predominant air traffic flow;

(viii) Landmarks and cultural features, including areas prone to flat-light, whiteout, and brownout conditions; and

(ix) Local aviation and safety resources and contact information; and

(11) Any other requirements as determined by the Administrator to ensure safe operations.

(g) *Operations control specialist duty time limitations.* (1) Each certificate holder must establish the daily duty period for an operations control specialist so that it begins at a time that allows that person to become thoroughly familiar with operational considerations, including existing and anticipated weather conditions in the area of operations, helicopter operations in progress, and helicopter maintenance status, before performing duties associated with any helicopter air ambulance operation. The operations control specialist must remain on duty until relieved by another qualified operations control specialist or until each helicopter air ambulance monitored by that person has completed its flight or gone beyond that person's jurisdiction.

(2) Except in cases where circumstances or emergency conditions beyond the control of the certificate holder require otherwise—

(i) No certificate holder may schedule an operations control specialist for more than 10 consecutive hours of duty;

(ii) If an operations control specialist is scheduled for more than 10 hours of duty in 24 consecutive hours, the certificate holder must provide that person a rest period of at least 8 hours at or before the end of 10 hours of duty;

(iii) If an operations control specialist is on duty for more than 10 consecutive hours, the certificate holder must provide that person a rest period of at least 8 hours before that person's next duty period;

(iv) Each operations control specialist must be relieved of all duty with the certificate holder for at least 24 consecutive hours during any 7 consecutive days.

(h) *Drug and alcohol testing.* Operations control specialists must be tested for drugs and alcohol according to the certificate holder's Drug and Alcohol Testing Program administered under part 120 of this chapter.

§ 135.621 Briefing of medical personnel.

(a) Except as provided in paragraph (b) of this section, prior to each helicopter air ambulance operation, each pilot in command, or other flight crewmember designated by the certificate holder, must ensure that all medical personnel have been briefed on the following—

(1) Passenger briefing requirements in § 135.117(a) and (b); and

(2) Physiological aspects of flight;

(3) Patient loading and unloading;

(4) Safety in and around the helicopter;

(5) In-flight emergency procedures;

(6) Emergency landing procedures;

(7) Emergency evacuation procedures;

(8) Efficient and safe communications with the pilot; and

(9) Operational differences between day and night operations, if appropriate.

(b) The briefing required in paragraphs (a)(2) through (9) of this section may be omitted if all medical personnel on board have satisfactorily completed the certificate holder's FAA-approved medical personnel training program within the preceding 24 calendar months. Each training program must include a minimum of 4 hours of ground training, and 4 hours of training in and around an air ambulance helicopter, on the topics set forth in paragraph (a)(2) of this section.

(c) Each certificate holder must maintain a record for each person trained under this section that—

(1) Contains the individual's name, the most recent training completion date, and a description, copy, or reference to training materials used to meet the training requirement.

(2) Is maintained for 24 calendar months following the individual's completion of training.

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Michael P. Huerta,

Administrator, Federal Aviation Administration.

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