DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 135

[Docket No. 28743; Notice No. 96–14]

RIN 2120–AG22

Commercial Passenger-Carrying Operations in Single-Engine Aircraft under Instrument Flight Rules

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of Proposed Rulemaking.

SUMMARY: The Federal Aviation Administration (FAA) is proposing to revise the conditions and limitations in Part 135 for instrument flight rule (IFR), passenger-carrying operations in single-engine aircraft. The proposed rule will expand the passenger-carrying provisions of the current rule, add equipment requirements, as well as maintenance requirements to monitor engine reliability, and delete the limited IFR provisions of the existing rule for both single and multi-engine aircraft. Currently, operation of single-engine aircraft carrying passengers is authorized for visual flight rules (VFR) or for limited operations in instrument meteorological conditions (IMC). Single-engine cargo operations are authorized to operate under IFR without these limitations. VFR flight into IMC is the most significant cause of fatal accidents in Alaska and is a serious problem for single-engine aircraft nationally. This action would increase the safety of single-engine, passenger-carrying operations by allowing planned instrument flight in the IFR system and by imposing certain other conditions and limitations.

DATES: Comments must be received by February 3, 1997.

ADDRESSES: Comments on this notice should be submitted in triplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attn: Rules Docket (AGC–200), Room 915–G, Docket No. 28743, 800 Independence Ave., SW, Washington, DC 20591. Comments must be marked Docket No. 28743. Comments also may be submitted electronically to the following Internet address: nprmcmts@faa.dot.gov. Comments may be examined in room 915G weekdays between 8:30 a.m. and 5 p.m. except on Federal holidays.

FOR FURTHER INFORMATION CONTACT: Ms. Katherine Hakala, Flight Standards Service, Federal Aviation Administration, 800 Independence Ave, SW, Washington, DC 20591 (202) 267–8166/3760.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested persons are invited to participate in the making of the proposed rule by submitting such written data, views, or arguments as they may desire. Comments relating to the environmental, energy, federal, or economic impact that might result from adopting the proposals in this notice are also invited. Substantive comments should be accompanied by cost estimates, if appropriate. Comments should identify the regulatory docket or notice number and should be submitted in triplicate to the Rules Docket address specified above. All comments received on or before the specified closing date for comments will be considered by the Administrator before taking action on this proposed rulemaking. The proposals contained in this notice may be changed in light of comments received. All comments received will be available, both before and after the closing dates for comments, in the Rules Docket, for examination by interested persons. A report summarizing each substantive contact with FAA personnel concerned with this rulemaking will be filed in the docket. Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this notice must include a pre-addressed, stamped postcard on which the following statement is made: ''Comments to Docket No. 28743.'' The postcard will be date stamped and returned to the commenter.

Availability of NPRMs

An electronic copy of this document may be downloaded, using a modem and suitable communications software, from the FAA regulations section of the Fedworld electronic bulletin board service ((703) 321–3339), the Federal Register's electronic bulletin board service ((202) 512–1661), or the FAA's Aviation Rulemaking Advisory Committee Bulletin Board service ((800) 322–2722 or (202) 267–5948).

Internet users may reach the FAA's web page at http://www.faa.gov or the Federal Register's web page a http://www.access.gpo.gov/su__docs for access to recently published rulemaking documents.

Any person may obtain a copy of this NPRM by submitting a request to the Federal Aviation Administration, Office of Rulemaking, ARM–1, 800 Independence Ave, SW, Washington, DC 20591, or by calling (202) 267–9677. Communications must identify the notice number or docket number of this NPRM.

Persons interested in being placed on the mailing list for future NPRMs should request from the above office a copy of Advisory Circular No. 11–2A, Notice of Proposed Rulemaking Distribution System, which describes the application procedure.

Rationale

In the past, the rationale against single-engine IFR passenger-carrying operations centered on the hazards of losing an engine. Analysis indicates, however, a far more significant accident category: flight under visual flight rules (VFR) into instrument meteorological conditions (IMC). A recent NTSB study of aviation in Alaska indicated that VFR flight into IMC caused a disproportionate number of fatal accidents in part 135 operations in that state. Multi-engine airplanes are able to file and fly with passengers under IFR, while single-engine airplanes are only able (with few exceptions) to carry passengers under VFR. Thus, multi-engine airplanes have the advantage of contact with ATC, position following, en route and terminal weather information, and the higher altitude ensuring obstacle clearance and radio reception in the IFR system. The FAA Administrator, in a November 18, 1994, letter to pilots (''Winter Operations Emphasis Program 1994,'' available in the docket), expressed his concern about the number of accidents that occur when pilots are flying just below a low ceiling and collide with the terrain. He stated that one of the safest steps available was to take advantage of the IFR system. Aircraft flying at published cruising altitude that guarantees obstacle clearance and radio reception have considerably more time to glide to a landing and maneuver to a safe landing area than those flying below the ceiling.

The number of accidents involving VFR flight into IMC is substantial. It is concern with this safety hazard that prompted the FAA to reconsider its limitations on single-engine IFR flight with passengers under part 135. Additionally, the FAA has considered the action of Canada that allowed single-engine passenger-carrying IFR under certain conditions, and the petitions for exemption of the Alaska Air Carrier Association and individual operators. While this action will not eliminate VFR flight into IFR conditions accidents, it is expected that it will reduce the accident rate.

Background

Prior to October 10, 1978, passenger-carrying, single-engine instrument flight rule (SEIFR) operations were permitted

if an aircraft could descend to VFR conditions in the event of an engine failure. This provision allowed operations in IMC or over-the-top of a ceiling, as long as VFR conditions existed below that ceiling (i.e., a buffer zone). In 1978, part 135 was substantially revised for passenger-carrying operations over the top or in IFR conditions to require an aircraft to be able to descend under VFR if its engine fails (43 FR 46742, October 10, 1978). This revision also provided for ''limited IFR'' operations which, if VFR conditions were forecast within 15 minutes flying time, allowed flight in IMC for the first 15 minutes of flight, and thereafter only if those IFR conditions were unforecast. The pilot can operate in IFR conditions if unforecast weather conditions are encountered while en route on a flight planned to be conducted under VFR. The pilot can make an IFR approach at the destination airport if unforecast weather conditions are encountered that do not allow an approach under VFR. This rule had the effect of eliminating the buffer zone provisions, restricting planned flights under IFR in IMC, and restricting VFR over-the-top flights to scattered or broken sky conditions. An exception to the two-pilot requirement, or autopilot requirement, is provided for limited IFR operations in § 135.103. Limited IFR can be conducted as a single-pilot operation in aircraft with nine or fewer passenger seats. Cargo-only, single-engine aircraft can operate under IFR or over the top without these restrictions.

Since 1978, the FAA has received 12 petitions for exemptions from or amendments to § 135.181 to allow the use of all or specific models of single-engine aircraft in passenger-carrying IFR operations. The most recent petitions are still pending. Internationally, commercial operators in several countries have sought permission to conduct passenger operations in IMC with single-engine aircraft. Canada, following a cooperative effort with the engine manufacturers, aircraft manufacturers, and users that produced a well-documented case, has allowed SEIFR passenger-carrying operations in turbine-powered airplanes since February 1993, with a number of specific requirements for equipment and training. Other countries are also considering permitting SEIFR passenger-carrying operations.

In response to the petitions, the Canadian action, and changes in technology that have resulted in increasingly reliable engines and aircraft systems, the FAA asked its Office of Integrated Safety Analysis to conduct a study to determine if demonstrable differences exist between single- and multi-engine aircraft in visual meteorological conditions (VMC) and IMC. The study, Part 135 Single-Engine Instrument Flight Rules Operations in Instrument Meteorological Conditions, February 24, 1994, (available in the docket) reviewed the basis for the Canadian action and available data from a number of sources on powerplant/systems reliability and activity exposure data.

In September 1994, the FAA asked the Aviation Rulemaking Advisory Committee (ARAC) to review the Canadian policy on SEIFR, re-examine FAA policies for commercial IMC and night operations by single-engine aircraft, determine conditions or limitations that such operations should meet, and recommend any changes. The ARAC formed a working group that included representatives of the FAA, Transport Canada-Aviation, the European Joint Aviation Authority, Australian Civil Aviation, several European national aviation authorities, aircraft and engine manufacturers, trade associations, pilot unions, and commercial operators. The committee recommended that § 135.181 be revised to permit SEIFR passenger-carrying operations provided certain requirements for equipment and training were met. The ARAC proposal, although not technically limited to a particular type of aircraft, proposed certain conditions that are met at present only by turbine-powered aircraft. The ARAC also recommended approval of the Alaska Air Carrier Association's (AACA) petition for exemption, which covers both turbine-powered and reciprocating engine aircraft. Both the ARAC and the FAA study focused on the issue of engine reliability.

Recently, the National Transportation Safety Board (NTSB) completed a study of operations in Alaska Aviation Safety In Alaska, (Safety Study NTSB/SS–95/03, PB95–917006). The NTSB noted that unlike the rest of the U.S., commuter airline service in Alaska is ''dominated by single-engine airplanes powered by a reciprocating engine operating under VFR and crewed by one pilot.'' After reviewing Alaska aviation accidents from 1988 to 1993 (which include single and multi-engine aircraft), the NTSB concluded that ''VFR flight into IMC that results in fatal accidents continues to be the most significant safety problem in Alaskan aviation.'' VFR flight in IMC in Alaska accounted for 67 percent (6 of 9) fatal commuter airline accidents and 47 percent (7 of 15) fatal air taxi accidents. Overall, in Alaska, VFR flight into IMC accounted for only 15 percent of the total accidents, but 54 percent of the fatal accidents. The NTSB recommended that the FAA proceed with rulemaking to allow SEIFR passenger-carrying operations in turbine-powered aircraft and evaluate whether extending the rule to all single-engine aircraft would provide a positive effect on safety.

Prior to the Alaska aviation study, the NTSB conducted a study of the emergency medical service (EMS) helicopters because their accident rate was twice the rate experienced by part 135 on demand helicopter operations and one and half times the rate for all turbine-powered helicopters. For the report, ''Safety Study—Commercial Emergency Medical Service Helicopter Operations'' (NTSB 1988), an exploration of the rapidly growing commercial EMS helicopter industry and its operations, the NTSB investigated and evaluated 59 helicopter accidents. The Board determined that marginal weather conditions and inadvertent flight into IMC remain the most serious hazard that VFR helicopters encounter. ''The Board believes that although the IFR system is not designed optimally for IFR helicopters and that the nature of the EMS helicopter mission further complicates this problem, the safety advantages offered by IFR helicopters flown by current and proficient pilots are great enough that EMS programs should seriously consider obtaining this capability.''

The Alaska Air Carriers Association in its petition for exemption has stated, and the NTSB study confirmed, that in many areas, only single-engine aircraft can be operated because of the limitations of the landing strips, which severely restrict the availability of air transport in these areas. The petitioners further stated that under the current rule, unless clear weather is forecast over the entire route from 15 minutes from the departure airport to the destination, passenger-carrying, single-engine commercial operations are not permitted. In many areas, aircraft are the only means of transportation; weather forecasts, when available, rarely predict continuing VFR conditions. Alaska, they stated, was particularly disadvantaged by the current rule. Recent legislation requires the FAA to consider the special needs of Alaska when developing its rules.

As suggested by the NTSB, the FAA reviewed accident data from 1983 to 1996 on both reciprocating and turbine engines. Data indicated that there were 67 accidents in on-demand operations that involved VFR flight into IFR

conditions; single-engine aircraft were involved in 75 percent of these accidents. Although the number of such accidents is known, the rate of such accidents cannot be determined because the FAA does not collect data on the number of flights or flight hours for on-demand operations under part 135; therefore, it is not possible to evaluate existing data on accidents involving turbine-powered and reciprocating-powered single-engine aircraft.

Disposition of Pending Petitions

The FAA currently has similar petitions for exemptions to § 135.181 from the Alaskan Air Carriers Association, Mid-Atlantic Freight, Atlantic Aero, Wright Air Service, Inc., Taquan Air Service, Inc., and Telford Aviation, Inc. In developing this Notice of Proposed Rulemaking, the FAA considered the merits of each of the individual petitions and proposed appropriate points and recommendations from them. This notice formally disposes of those petitions.

Discussion of the Proposed Rule

The purpose of this rule is to improve the safety of single-engine, passenger-carrying operations by allowing operators to take advantage of the IFR system. This proposal would allow planned flight at a minimum en route altitude that ensures obstacle clearance and ATC communications over a published route, thereby reducing the occurrence of continued VFR flight into IMC. Parts 91 and 135 currently require additional aircraft equipment, pilot training, experience, and qualification, and weather and fuel requirements to operate under IFR. Operations under the existing limited IFR rules must meet the requirements for IFR operations with the exception that a second pilot or autopilot authorization is not needed. The current equipment, pilot, weather, fuel, and other differences for VFR and IFR operations are outlined in the Table at the end this section. This NPRM proposes to remove the limited IFR operations and allow SEIFR operations with additional conditions and limitations that will further enhance the safety of SEIFR operations over VFR and limited IFR operations.

The FAA is proposing to change part 135 to allow passenger-carrying SEIFR subject to the following conditions:

- A means of engine trend monitoring would be required in addition to the inspection requirements of 14 CFR part 91; and
- Two independent electrical power generating sources or, in addition to the original electrical power source, a standby battery that can maintain 150 percent of the minimum electrical load for at least one hour would be required.

In addition, the limited IFR conditions of current § 135.181 would be eliminated. The proposed rule changes would not affect cargo-only operations.

The FAA originally limited passenger-carrying SEIFR operations because of concern about the consequences of engine loss. The February 1994 FAA study, which focused on the difference between single-engine and multi-engine aircraft, found that data that specifically address the issue of the reliability of single-engine aircraft in IMC under part 135 are necessarily limited to cargo-only operations because relatively few passenger-carrying operations occur under these conditions. In addition, the FAA does not require manufacturers and operators of small aircraft and powerplants to have established databases capable of providing information needed to support reliability evaluations. Data available collected from various sources were found to be frequently incomplete and inconsistent in reporting format, limiting their usefulness.

The 1994 FAA study analysis of NTSB data for part 135 on-demand airplane accidents for 1988 to 1990 indicated that although propulsion system accidents account for a higher percent of total accidents for single-engine (18 percent) than for multi-engine airplanes (6 percent), only 2 of the 24 accidents caused by propulsion systems occurred in IMC. Accidents involving propulsion system failure in IMC appear to be very infrequent occurrences. This can be attributed in part to the limits on passenger-carrying operations of aircraft in IMC; however, cargo-only IFR operations are included in these data. Weather was a casual factor in 24 percent of all accidents; improper flightcrew actions contributed to 95 percent of weather-related accidents. Mechanical problems, however, were a factor in only one-single-engine and one multi-engine weather-related accident, suggesting that accidents involving equipment failure during flight in instrument conditions are relatively rare events in on-demand air carrier operations. The data also show that most accidents in IMC result in fatal or serious injuries, regardless of the type of flight plan or class of airplane. FAA data on part 135 accidents involving single-engine aircraft from 1985 to 1992 indicated that the most common causes of accidents were weather, poor in-flight planning and decision-making, and other weather-related errors resulting from attempts to maintain VFR flight.

Analysis of part 135 scheduled airplane accident data revealed patterns in accident causal factors that are very similar to those for on demand operations. Analysis of business airplane accidents that occurred during part 91 operations provided additional perspective on the relative contribution of systems and equipment reliability problems to accidents. Accidents involving propulsion and other system failures in IMC were infrequent occurrences even though part 91 operators are not subject to the same restrictions or level of regulation and oversight as part 135 operators.

The FAA recognizes that engine failure in a single-engine aircraft results in an inability to sustain flight. The FAA has determined, however, that allowing SEIFR passenger-carrying operations will enhance safety over VFR flights in marginal weather conditions and over flights under the limited IFR provisions of part 135. Aircraft operating under IFR are part of the national IFR system, which includes air traffic monitoring and control system; this system ensures that both pilots and air traffic controllers know where the aircraft is and can work together to avoid hazards and complete the flight safely. Immediate emergency assistance is available in the event of an emergency. Data from the Rescue Coordination Center have shown that should an accident occur, aircraft that were operating under the IFR system are located within a few hours; aircraft that were operating under the VFR system often take days to locate.

The FAA does not expect that operators currently flying multi-engine aircraft will switch to single-engine aircraft simply because of this rule change; decisions about the type of aircraft to operate are complex. Operators must weigh numerous factors when selecting aircraft, including customer base and geographical location. Whatever choice operators make, the FAA remains convinced that the proposed rule change will increase safety of single-engine, passenger-carrying operations.

New Requirements

In addition to the inspections requirements of part 43, the FAA is proposing to adopt the ARAC suggestion for engine wear and trend monitoring. Such monitoring provides an early indication of engine wear and increases engine reliability. The engine trend monitoring system would require an oil analysis at 100-hour inspection or every

annual inspection if less than 100 hours have accrued.

The oil analysis program is an important tool in determining the relative state of engine health. Samples of engine oil are collected at selected intervals (usually around the 100-hour interval or less) The oil samples are identified by make and model of engine, total time on the engine, and last oil and filter change. The sample is then sent to a laboratory in which the oil is subjected to a series of tests in which the amount of trace elements, such as iron and aluminum, are identified. A report is sent back to the operator recommending another 100 hours of operation or, because of an abnormal amount of a particular element found in the oil, a particular maintenance action; this action may be a simple filter change, or a borescope inspection, other maintenance inspection/test, or a complete teardown and rebuild of the engine. Regular oil analysis allows the operator to track the engine's condition accurately and predict failures before they would occur.

Current IFR requirements require a generator or generators (or alternator) able to supply all probable combinations of continuous in-flight electrical loads for required equipment and for recharging the battery. The FAA is also proposing to adopt a modification of the ARAC suggestion for two independent electrical power generating sources; the proposed rule would specifically allow a standby battery to serve as a second power source if the battery can maintain 150 percent of the minimum electrical load for at least one hour. This requirement introduces redundancy for the generator and alternator and ensures that, if a generator or alternator fails, the aircraft will still be able to use critical navigation and communication equipment, for a period of time in which to effect a safe approach and landing. The FAA will consider, and requests comments on other redundant or standby electrical systems.

Section 135.163 (h) currently requires two independent sources of energy (with means of selecting either) for powering all gyroscopic instruments. Of these sources, at least one must be an engine-driven pump or generator; each source must be capable of driving all gyroscopic instruments, and installed so that failure of one instrument or source does not interfere with the energy supply to the remaining instruments or the other energy source, unless, for single-engine aircraft, the rate-of-turn indicator has a source of energy separate from the bank and pitch and direction indicators.

The FAA considered requiring electrical or vacuum redundancy to drive the gyroscopic instruments, however, the precise configuration of that redundancy is not proposed. The FAA is requesting comments on the feasibility, benefit, and cost of two independent sources of energy for gyroscopic instruments for single engine aircraft. If, for single-engine aircraft, the rate of turn exception is maintained as stated in the current 135.163(h), the FAA will require that training and testing on emergency and partial panel operations be provided and evaluated. Comments are further requested on whether the rate-of-turn indicator powered from a separate source, coupled with required training and testing, should be considered adequate for single-engine IFR passenger operations.

Based on the comments received, the FAA may adopt additional provisions for a redundant source of power for the gyroscopic instruments or electrical systems in the final rule.

The FAA is proposing to delete the existing limited IFR provisions, which allow opeators to take off in IFR conditions if VFR conditions are forecast for the remainder of the route from a distance no further than 15 minutes flight time for the departure airport. This revision eliminates safety deficiencies of the conduct of ''unplanned'' IFR flight. Under the limited IFR rule, pilots can only conduct IFR operations en route and on an approach if weather conditions were unforecast, which means the pilots may not have planned for IFR and may have to develop and file a flight plan in flight, while coping with unexpected weather conditions. Limited IFR also allows these operations to be conducted as a single pilot operation, without a second pilot or autopilot that is required for other IFR operations. In addition, the limitations on weather forecasting have made this provisions impractical in many parts of the U.S.

It is the FAA's intent that, because multi-engine operators can already avail themselves of unrestricted IFR, the proposed removal of the limited IFR provision in § 135.181(c) (2) and the exception to the second-in-command requirement for limited IFR operations in § 135.103 would not impact these operators. The FAA invites comments from operators who used the limited IFR provision regarding the economic impact of this proposal.

The proposed changes would allow SEIFR operations in single-engine airplanes and turbine-powered helicopters that can be equipped for IFR flight. A number of single-engine reciprocating-powered airplanes will not be able to upgrade for IFR or would find the cost prohibitive. Single-engine, reciprocating-powered helicopters as they currently exist are not certificated for IFR operations. Consequently, they would not be affected by this rule change.

Other Issues Considered

The FAA reviewed suggestions made by the ARAC and the petitions submitted, but decided against adopting other limitations on SEIFR passenger-carrying operations. Some of the ARAC suggestions would have limited the rule to turbine-powered aircraft (e.g., use of auto-ignition/continuous ignition system); the suggested requirement for mean time between failure data and simulator training would have severely limited the rule, at least in the short-term, to a single aircraft, the Cessna Caravan. The FAA does not believe that such a limitation is justified because flying IFR improves the safety of all operations over flying VFR in marginal weather conditions and flight under the current limited IFR provisions.

A number of suggested requirements were not adopted because they are already covered under existing rules; for example, autopilot training and proficiency checks are currently required. The FAA decided that the suggested requirement for an air transport pilot certificate for commuter operations was unnecessary because of size and complexity of single-engine aircraft. Current requirements for single-engine, IFR provide for at least a commercial certificate with appropriate category and class ratings, and if required, type ratings, 1,200 hours of flight time including 500 hours of cross country, 100 hours of night, and at least 50 hours of actual instrument flight time. Other ARAC suggestions were not proposed because they go beyond what is required for aircraft certification (e.g., manual throttles and auto ignition); the FAA decided that it was inappropriate to alter certification rules through this rulemaking. The ARAC proposal for IFR-approved area navigation equipment that provides immediate identification of and heading to the nearest airport was not proposed in this NPRM. The safety benefit of this equipment has not been established. Finally, the FAA has not proposed the ARAC and other petitioners' suggestion for a radar altimeter. Such altimeters are only required for Category II and III operations; the FAA believes that the benefits of such altimeters for other operations have not been established to a sufficient degree to justify the considerable costs.

Canada adopted a limitation on flights in mountainous areas in its SEIFR rule; the AACA in its petition proposed a limitation for mountainous areas as defined by § 95.17. The Atlantic Aero, Inc. and Mid-Atlantic Freight Inc. 1994 petition for exemption proposed to limit SEIFR operations to routes where the minimum en route altitude (MEA) was no greater than 10,000 feet mean sea level (MSL). Taquan Air proposed to limit SEIFR operations to routes where the MEA was no greater than 12,000 feet MSL. The FAA decided that a mountainous terrain restriction was not needed. The definition of mountainous terrain in part 95 is very broad and would limit flight unnecessarily. Under part 95, almost all of Alaska, Hawaii, and the western third of the country are classified as mountainous. Single-engine cargo IFR operations and limited IFR operations are not similarly restricted. The FAA notes that some single-engine airplanes are limited by their service ceilings; others are limited by the lack of pressurization or oxygen. In some areas, the lack of navigational equipment also will limit flight over mountainous terrain. The FAA further notes that some pressurized single-engine aircraft can cruise at altitudes that provide much more time for making a safe landing should the engine fail. Finally, the difficulties of finding a safe landing area for all aircraft are not unique to mountainous terrain; densely populated areas may pose similar problems.

Section-by-Section Discussion of Proposed Changes

Section 135.83 would be amended to change the reference to § 135.181 to make it consistent with the revised rule.

Section 135.101 would be revised to eliminate the reference to § 135.103, which would be deleted, and to delete the work ''conditions'' after IFR. Deletion of the word ''conditions'' clarifies that any operation for which an IFR flight plan is filed must have a second pilot or an autopilot, even if the flight can be conducted in VFR conditions.

Section 135.103 would be deleted because it is no longer needed.

Section 135.163 would be revised to add, for single-engine aircraft reference to alternators as well as the proposed requirement for two independent electrical power generating sources or a standby battery.

Section 135.181 would be revised by dropping all of the limited IFR conditions. Only the performance requirements for multi-engine aircraft would remain.

Section 135.421 would be revised to add the requirement for engine trend monitoring for aircraft used in passenger-carrying SEIFR operations.

BILLING CODE 4910–13–M

TABLE 1 - CURRENT EQUIPMENT REQUIREMENTS FOR IFR AND VFR OPERATIONS

	SEIFR--PASSENGER OPERATIONS	MULTIENGINE IFR-PASSENGER OPERATIONS	VFR- PASSENGER OPERATIONS
EQUIPMENT: CARRYING PASSENGERS	135.163(a)- Vertical speed indicator	Same	Not required by operating rules
	135.163(b)- Free-air temperature indicator	Same	Not required by operating rules.
	135.163(c)- Heated pitot tube for each airspeed indicator	Same	Not required by operating rules.
	135.163(d)- Power failure warning device or vacuum indicator to show power available for gyro instruments from each power source	Same	Not required by operating rules.
	135.163(e)- Alternate source of static pressure for altimeter,airspeed, & vertical speed indicators	Same	Not required by operating rules.
	135.163(f) -Generator or generators able to supply all probable combinations of continuous in-flight electrical loads for required equipment and for recharging battery--91.205(d) - Generator or alternator of adeq. capacity	135.163(g) - 2 generators each on a separate engine, of which any combi of 1/2 of total no. are rated sufficiently to supply elec loads of all required instruments and equipment for safe emerg. ops--ME Hel-generators mounted on main rotor drive train	91.205(c)- VFR Night-Adeq source of elec energy for all installed elec and radio equip/ 135.159(e) -VFR carrying pax at Night/ VFR over the top: Generator(s) able to supply all prob combi of contin. inflight elec loads for req. equip & recharge battery
	135.163(h)- 2 independent sources of energy, at least 1 engine-driven pump or generator, each able to drive all gyro instr/installed so fail. of 1 inst. or source does not interfere with energy supply unless rate of turn source separate from pitch & bank	Same except each engine-driven source of energy must be on separate engine	Not specified in operating rules.
	135.165(b) -A transmitter, except additional transmitter required for extended overwater operations	Same, except for 10+ turbojet or multi engine airplane in commuter ops: 2 transmitters-135.165(a)	135.161 -VFR carrying pax at night or over the top: 2 way radio communications to transmit and receive from ground facilities 25 miles away
	135.165(b)- Two microphones	Same	135.161-One required to meet communications requirement for VFR carrying pax at night or over the top
	135.165(b)- Two headsets or one headset and one speaker	Same	Not specified in operating rules
	135.165(b) -Marker beacon receiver	Same	Not required

	135.165(b)- 2 independent receivers for navigation --91.205(d)- nav equip approp to ground facilities to be used	Same	135.161(b) -Aircraft carrying pax VFR over top- radio nav equip to receive ground facility to be used/ 135.161(c)- Airplane carrying pax VFR night- radio nav equip to receive ground fac. to be used
	91.205(d)- Gyro rate-of-turn except for airplanes and rotorcraft with a third attitude inst. system	Same	135.159 -Carrying pax VFR at Night or VFR over the top:Gyro rate-of-turn except airplanes and helicopters with a third attitude instrument system or helicopters with a max cert TO wt of 6000 pounds or less
	91.205(d)- Slip skid indicator	Same	135.159(b)- Carrying pax VFR at Night or VFR over the top: slip skid indicator
	91.205(d)- Sensitive altimeter	Same	91.205 (b)- Altimeter
	91.205(d)- Clock	Same	Not required
	91.205(d)-Gyroscopic pitch and bank indicator (artificial horizon)	Same	135.159(c)- Carrying pax VFR at night or VFR over the top: Gyroscopic bank and pitch indicator
	91.205(d)- Gyroscopic direction indicator (directional gyro or equivalent)	Same	135.159(d)- Carrying pax VFR at night or VFR over the top: Gyroscopic direction indicator
	135.105- IFR conditions-Operative approved autopilot system authorized by ops specs. Autopilot capable of operating a/c controls to maintain flight and maneuver it about 3 axes(OR 2 pilots or limited IFR-135.101, 135.103)	Same	Not required
PILOT REQUIREMENT	135.101, 135.105, 135.103-IFR conditions-2nd in command required or single pilot with autopilot or in limited IFR	Same, except 2 pilots required if 10+ pax seats-135.99	One pilot
PILOT QUALIFICATIONS	135.243-Commercial and appropriate category and class and type rating, and instrument rating or ATP	135.243-Same, except PIC of turbojet, airplane with 10+ pax seats, or multiengine airplane in commuter ops must have ATP--Helicopter in scheduled interstate ops-ATP, appropriate type ratings and instrument rating	135.243-Same, except instrument rating or ATP not required for SE recip airplanes when non-scheduled(5 or less round trips a week) and does not transport mail
	135.243-1200 hours flight time, inc. 500 x-country,100 night,75 actual or sim. instrument time of which 50 were in flight	Same	135.243-500 hours of flight time, 100 x-country, 25 of which were at night
PILOT TESTING	135.293- Competency check each type aircraft ea yr for PIC and SIC, if req.	Same	Same

	135.297-Instrument proficiency check ea 6 mo. PIC- Includes autopilot check if authorized(Inst. prof. check may subst. for type a/c competency check/ can rotate check in types of authorized a/c)	Same	Not required
	135.299- Line check ea yr. for PIC	Same	Same
WEATHER AND AIRSPACE/AIRPORT REQUIREMENTS	135.215-Controlled airspace, airport must have approved instrument approach procedure (outside of controlled airspace as authorized by op specs)	Same	Can operate in uncontrolled airspace/no instrument approaches required
	135.213- Weather observations for IFR must be taken at the airport where ops are conducted/made by approved source	Same	135.213- PIC can use wx info based on own observations or on those of persons competent to supply observations
	135.219-Cannot takeoff unless reports or forecasts indicate wx at ETA will be at or above authorized IFR min.	Same	135.211-VFR over the top carrying pax: Wx at point of termination of over the top must allow descent to beneath ceiling under VFR or allows IFR approach & landing with flight clear of clouds unless radar appr./Descent under VFR if engine fails
	135.223- Alternate required if 1 hr before/after, ceiling less than 1500 ft above lowest circling MDA or above lowest published min. or 2000 ft above airport, whichever higher and vis is less than 3 miles or 2+lowest vis min, whichever greater	Same	No alternate required
	135.225- Can't begin approach without weather observer & wx above IFR landing min.	Same	Weather observer not required/ 135.213- PIC can use wx based on own observations or on those of persons competent to supply observations
	135.181- If reports or forecasts indicate VFR in 15 min,can takeoff in IFR conditions & fly in IFR to pt. no more than 15 min; operate in IFR conditions if unforecast wx encountered and make IFR appr if unfrcst wx./ All cargo can fly IFR cond.	Can operate in IFR conditions	135.181 -VFR over the top if wx rep or forecasts indicate VFR under ceiling. Must be able to descend under VFR if engine fails. Also see 135.211
	135.225- MDA or DH and vis increased by 100 ft and1/2mile for ea PIC of turbine airplane who does not have 100 hours as PIC in that type	Same	Not applicable
PERFORMANCE	No performance specified.	135.181- Weight that allows ME airplane to climb with critical eng. inop at least 50 ft/min at MEA or 5000 whichever higher/ 135.181(b) ME helic. same except MEA or 1500 ft whichever higher	No performance specified.
FUEL REQUIREMENTS	91.167- Complete flight + fuel to alternate (if required)+ 45 minutes reserve or, for helicopters, 30 minutes reserve	Same	135.209-30 min reserve day/ 45 night/ Helicopter 20 min. reserve

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CRUISING ALTITUDE	Published MEA/ published approach min.	Same	135.203-Day- 500 feet/ Night-1000 feet, Mountainous terrain-2000 feet
FLIGHT PLAN	IFR	Same	VFR flight plan or 135.179- provide certificate holder with info required to be on a VFR flight plan

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Regulatory Evaluation Summary

Proposed changes to Federal regulations must undergo several economic analyses. First, Executive order 12866 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 requires agencies to analyze the economic effect of regulatory changes on small entities. Third, the Office of Management and Budget directs agencies to assess the effect of regulatory changes on international trade. In conducting these analyses, the FAA has determined that this rule: (1) Would generate benefits that justify its costs and is not ''significant regulatory action'' as defined in the Executive Order; (2) is not significant as defined in Department of Transportation Regulatory Policies and procedures; and (3) would not constitute a barrier to international trade. These analyses, available in the docket, are summarized below.

Cost-Benefit Analysis

The FAA proposes to update and revise the regulations to allow single-engine, passenger carrying aircraft to operate under the safer instrument flight rules. This proposal would require additional conditions and requirements that will further enhance the safety of single engine instrument flight rules (SEIFR) operations.

The cost of this proposed rule is estimated at $33.9 million ($27.5 million, discounted). The most costly provision is on the requirement for an autopilot, which is estimated at $25.6 million ($20.9 million discounted) and represents about 76 percent of the total. The FAA concludes that the expected quantitative benefits would be a minimum of $185.0 million or $129.9 million discounted. This action would increase the safety of single-engine passenger-carrying operations because it would allow them to operate under instrument flight rules. The proposal would reduce the incentive for operators to conduct low altitude operations under marginal weather conditions in order to not lose business. It would require operators to meet the more stringent requirements for such flights including additional aircraft equipment.

Initial Regulatory Flexibility Assessment

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily or disproportionately burdened by Federal Regulations. The RFA requires an analysis if a proposed rule would have ''a significant economic impact on a substantial number of small entities.'' The definitions of small entities and guidance material for making determinations required by the RFA are contained in the Federal Register (47 FR 32825, July 29, 1982). Federal Aviation Administration (FAA) order 2100.14A outlines the agency's procedures and criteria for implementing the RFA.

With respect to the propose rule, a ''small entity'' is an operator of aircraft for hire with nine or fewer aircraft. A ''significant economic impact on a small entity'' is defined as an annualized net compliance cost for operators of aircraft for hire which in 1996 dollars is $125,100 for scheduled operators whose aircraft have more than 60 seats. It is $69,900 for scheduled operators whose fleets have aircraft with seating capacities of 60 or fewer seats (other scheduled operators) and $4,900 for unscheduled operators. A substantial number of small entities is defined as a number that is 11 or more and which is more than one-third of small operators subject to the proposed rule:

The analysis shows that the annualized cost of the proposed rule (assuming no cost savings) is about $1,400 per aircraft and the annualized safety and non-safety benefits is about $2,050 per aircraft. Therefore, the annualized net savings is about $650 per aircraft.

The FAA has determined that operators with eight aircraft or more would incur a significant positive impact. However, fewer than one-third of the entities would incur a significant positive cost impact. Therefore, the FAA has determined that a substantial number of operators would not be positively or negatively impacted in a significant way.

International Trade Impact Statement

This proposed rule is not expected to have any impact on trade opportunities for U.S. firms doing business overseas or foreign firms doing business in the United States. The proposed rule would primarily affect U.S. operators of aircraft for hire that provide domestic service.

Unfunded Mandates Reform Act Assessment

Title II of the Unfunded Mandates Reform Act of 1995 (the Act), enacted as Pub. L. 104–4 on March 22, 1995, requires each Federal agency, to the extent permitted by law, to prepare a written assessment of the effects of any Federal mandate in a proposed or final agency rule that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of $100 million or more (adjusted annually for inflation) in any one year. Section 204(a) of the Act, 2 U.S.C. 1534(a), require the Federal agency to develop an effective process to permit timely input by elected officers (or their designees) of State, local, and tribal governments on a proposed ''significant intergovernmental mandate.'' A ''significant intergovernmental mandate'' under the Act is any provision in a Federal agency regulation that would impose an enforceable duty upon State, local, and tribal governments, in the aggregate, of $100 million (adjusted annually for inflation) in any one year. Section 203 of the Act, 2 U.S.C. 1533, which supplements section 204(a), provides that before establishing any regulatory requirements that might significantly or uniquely affect small governments, the agency shall have developed a plan that, among other things, provides for notice to potentially affected small governments, if any, and for a meaningful and timely opportunity to provide input in the development of regulatory proposals.

This proposal rule does not meet the cost thresholds described above. Furthermore, this proposed rule would not impose a significant cost on small governments and would not uniquely affect those small governments. Therefore, the requirements of Title II of the Unfunded Mandates Reform Act of 1995 do not apply.

Paperwork Reduction Act

This proposed rule contains not information collection requests requiring approval of the Office of Management and Budget pursuant to the Paperwork Reduction Act (44 U.S.C. 3507 *et seq.*).

International Civil Aviation Organization and Joint Aviation Regulations

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to comply with International Civil Aviation Organization Standards and Recommended Practices to the maximum extent practicable. The FAA has determined that this proposal, if adopted, would not present any major differences.

Federalism Implications

The changes proposed by this NPRM would not have a substantial direct effect on the States, on the relationship between the National Government and

the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that the proposed amendments would not have federalism implications requiring the preparation of a Federalism Assessment.

Conclusion

For the reasons discussed in the preamble, and based on the findings in the Initial Regulatory Flexibility Determination and the International Trade Impact Analysis, the FAA has determined that this proposed regulation is not significant under Executive Order 12866. In addition, the FAA certifies that this proposal, if adopted, will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. This proposal is not considered significant under DOT Order 2100.5, Policies and Procedures for Simplification, Analysis, and Review of Regulations.

List of Subjects in 14 CFR Part 135

Air taxis, Aircraft, Aviation safety, Safety, Single-engine aircraft.

For the reasons set out in the preamble, 14 CFR part 135 is proposed to be amended as set forth below:

PART 135—AIR TAXI OPERATORS AND COMMERCIAL OPERATORS

1. The authority citation for part 135 continues to read as follows:

Authority: 49 USC 106(g), 40113, 44701–44702, 44705, 44709, 44711–44713, 44715–44717, 44722.

2. Section 135.101 is revised to read as follows:

§ 135.101 Second in command required under IFR.

Except as provided in § 135.105, no person may operate an aircraft carrying passengers under IFR unless there is a second in command in the aircraft.

3. Section 135.103 is removed and reserved.

4. Section 135.163 is amended to revise paragraphs (f) and (g) to read as follows:

§ 135.163 Equipment requirements: Aircraft carrying passengers under IFR.

* * * * *

(f) For a single-engine aircraft:

(1) two independent electrical power generating sources each of which is able to supply all probable combinations of continuous inflight electrical loads for required instruments and equipment; or

(2) in addition to single electrical power generating source, a standby battery that is capable of providing 150 percent of the minimum electrical load for at least one hour to operate navigation and communication equipment.

(g) For multi-engine aircraft, at least two generators or alternators each of which is on a separate engine, of which any combination of one-half of the total number are rated sufficiently to supply the electrical loads of all required instruments and equipment necessary for safe emergency operation of the aircraft except that for multi-engine helicopters, the two required generators may be mounted on the main rotor drive train; and

* * * * *

5. Section 135.181 is amended to revise paragraph (a)(1) and (c) to read as follows:

§ 135.181 Performance requirements: Multi-engine aircraft operated over-the-top or in IFR conditions.

(a) * * *

(1) Operate a single-engine aircraft carrying passengers over-the-top; or

* * * * *

(c) Without regard to paragraph (a) of this section, if the latest weather reports or forecasts, or any combination of them, indicate that the weather along the planned route (including takeoff and landing) allows flight under VFR under the ceiling (if a ceiling exists) and that the weather is forecast to remain so until at least 1 hour after the estimated time of arrival at the destination, a person may operate an aircraft over-the-top.

* * * * *

6. Section 135.421 is amended to add paragraph (c) to read as follows:

§ 135.421 Additional maintenance requirements.

* * * * *

(c) For each single engine aircraft to be used in passenger-carrying IFR operations, each certificate holder must incorporate into the manufacturer's recommended maintenance program or FAA approved maintenance program, an engine trend monitoring program including an oil analysis at each 100 hour interval and a record of the findings.

Issued in Washington, DC. on November 21, 1996.

Thomas C. Accardi,

Director, Flight Standards Service.

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