PREAMBLE

Part 103-Ultralight Vehicles

Operating Requirements

Adopted: July 30,1982 Effective: October 4,1982 (Published in 47 FR 38770, September 2,1982)

SUMMARY: This amendment establishes rules governing the operation of ultralight vehicles in the United States. The rule defines ultralight vehicles in two categories: powered and unpowered. To be considered an ultralight vehicle, a hang glider must weigh less than 155 pounds; while a powered vehicle must weigh less than 254 pounds; is limited to 5 U.S. gallons of fuel; must have a maximum speed of not more than 55 knots; and must have a poweroff stall speed of no more than 24 knots. Both powered and unpowered ultralight vehicles are limited to a single occupant. Those vehicles which exceed the above criteria will be considered aircraft for purposes of airworthiness certification and registration, and their operators will be subject to the same certification requirements as are aircraft operators. These rules for ultralight vehicles are needed to achieve an acceptable level of air safety by reducing potential conflict with other airspace users and to provide protection to persons and property on the ground.

The rule governs the operation of ultralight vehicles by specifying the airspace which requires prior authorization of Air Traffic Control (ATC), prohibiting operation over congested areas, and providing for operations during twilight hours with proper lighting. Right-of-way and minimum visibility rules are also established.

The FAA has chosen not to promulgate Federal regulations regarding pilot certification, vehicle certification, and vehicle registration, preferring that the ultralight community assume the initiative for the development of these important safety programs. The ultralight community is expected to take positive action to develop these programs in a timely manner and gain FAA approval for their implementation. Should this approach fail to meet FAA safety objectives, further regulatory action may be necessary.

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SUPPLEMENTARY INFORMATION:

Background

The FAA issued Advisory Circular No. 60-10, entitled "Recommended Safety Parameters for Operation of Hang Gliders" on May 16, 1974. That advisory circular contained recommended safety parameters for the operation of sport hang gliders, in lieu of formal Federal regulation. The advisory circular defined "hang glider" as "an unpowered, single place vehicle whose launch and landing capability depends on the legs of the occupant and whose ability to remain in flight is generated by natural air currents only." The sport of hang gliding has advanced dramatically since Advisory Circular No. 60-10 was issued.

There is now widespread use of powerplants, landing gear, and movable control surfaces to increase the speed, altitude, and distance capabilities of the vehicles. Many models have passenger carrying capability. As a result of those developments, many hang gliding vehicles no longer fall within the scope envisioned by Advisory Circular No. 60-10.

The addition of powerplants and controllable aerodynamic surfaces has created vehicles which can approximate the operational capabilities of fixed-wing and rotary-wing aircraft. The increasing performance capabilities of these vehicles, and their greatly increased number, have created a potential hazard to other aircraft and operators, as well as to the ultralight operators themselves. As the result of aerodynamic improvements, many unpowered hang gliders are now capable of extended soaring to altitudes exceeding 10,000 feet above the point of launch and distances of over 100 miles. The powered hang gliders now have the capability of sustained flight above 10,000 feet and forward speed exceeding 50 knots.

The operations of these vehicles are now a significant factor in aviation safety. The vehicles are routinely operated, without authorization, into regulated airspace, such as airport traffic areas, terminal control areas, positive control areas, and prohibited and restricted areas. Many operations have also taken place over congested areas and spectators and into adverse weather conditions in which operations may be conducted by pilots and aircraft which are qualified for instrument flight (IFR conditions). The midair collision potential presented by unauthorized operations is contrary to the FAA responsibility of ensuring the safety of all airspace operations including air carrier aircraft.

To illustrate the potential for hazardous situations that can arise, the FAA has recorded data detailing numerous instances of ultralight vehicles in controlled airspace causing near-miss situations with aircraft. The following examples highlight the problem:

(1) On March 24, 1981, an MU-2 flew between two ultralights operating off the end of the runway at Winter Haven, Florida. Both ultralights were equipped with floats and were operating at night without lights.

(2) On April 11, 1981, a Western Airlines 727 captain reported a near-miss with an ultralight vehicle in the vicinity of Phoenix, Sky Harbor Airport.

(3) In May of 1981, the pilot of a single engine aircraft reported a near-miss with an ultralight vehicle near Paso Robles, California. According to the report filed under the FAA Aviation Safety Reporting Program the ultralight was operating at 7,000 feet in IFR weather conditions. The airplane pilot, who was operating on an IFR flight plan, was forced to take evasive action to avoid a collision.

To establish regulations to deter flights which present a serious danger to aircraft and to provide a basis for necessary enforcement action the FAA published Notice of Proposed Rulemaking No 816 on July 27, 1981 (46 FR 38472). That Notice proposed to include both powered and unpowered hang gliders under the generic term "ultralight vehicle" and included proposed weight and fuel limitations for those vehicles. The Notice proposed a number of operational limitations for ultralight vehicles, while recognizing that the vehicles are used primarily for sport purposes. More than 2,500 persons and organizations submitted comments to that proposed rule. This rule is the result of FAA consideration of those comments in light of its responsibility for safety in the National Airspace System. Because of the growing significance of this segment

of the aviation community, the new rules have been codified under a new Part of the Federal Aviation Regulations, Part 103.

THE RULE

Subpart A --General

Section 103.1 Applicability (proposed §101.1(a)(3)).

This section defines the term "ultralight vehicle," The proposed rule would have limited the term to single-occupant designs weighing less than 155 pounds, with a fuel capacity of 15 pounds or less, and which had no U.S. or foreign airworthiness certificate. The final rule expands the definition to differentiate between powered and unpowered ultralight vehicles. The 155-pound weight limitation has been retained for unpowered designs and is the only criterion for those vehicles. Those ultralights equipped with powerplants must weigh less than 254 pounds empty weight. In addition, powered ultralight vehicles must have a fuel capacity not exceeding 5 U.S. gallons and be incapable of more than 55 knots calibrated airspeed at full power in level flight. The power off stall speed of a powered ultralight must not exceed 24 knots calibrated airspeed.

The rule restricts both powered and unpowered vehicles to single occupants and requires that the aircraft be used exclusively for sport or recreational purposes.

The FAA estimates that nearly all unpowered vehicles currently on the market will fall within the definition of ultralight vehicle. The new criteria will exclude approximately 7% of the powered vehicle designs currently being marketed as ultralights, although many of those may be suitable for modifications to bring them within the scope of the definition.

Unpowered ultralight vehicles

A number of commenters, including the United States Hang Gliding Association (USHGA), object to the inclusion of "pure" hang gliders in the same definition as powered hang gliders. They raise the point that there are a number of distinctive operational differences between a pure hang glider and a powered vehicle which should be considered when assessing the necessity for regulations for these vehicles. The USHGA emphasizes its own self-regulation program and safety record.

The FAA recognizes that the measures taken by the USHGA to promote safety at USHGA launch sites have been effective, particularly those measures taken to protect the participants. However, the basic rationale for issuance of this rule is the safety of all users of the national airspace, not just the ultralight operators. The great majority of hang gliding operations will not be affected by these regulations because as a number of commenters indicate, they are usually conducted in rural or remote areas, at low altitudes away from areas where safety of other persons in the air or on the ground is compromised. It is only in congested areas, airport traffic areas, and other areas frequented by aircraft involved in air commerce that the rules would restrict operations of unpowered ultralight vehicles.

The USHGA's self-regulation program lacks the legal authority to enforce requirements to ensure the safety of others. There is no requirement for any hang glider operator to be a member of the USHGA.

Current hang glider publications have carried a number of articles describing hang glider operations which violate Part 91 regulations as well as the recommendations of Advisory Circular No. 60 10. Those descriptions have included operations near and into clouds, low-altitude operations over open-air assemblies of persons, and flights in close proximity to airports with large concentrations of airline and general aviation aircraft operations. Those potentially hazardous operations created the requirement for Federal regulatory limitations on hang gliders.

The proposed maximum weight restriction of less than 155 pounds was retained for unpowered ultralight vehicles to:

(1) recognize the unpowered vehicles as a separate entity from those that are powered; and

(2) ensure that the unpowered vehicles continue to meet essentially the same criteria that prevented their being classified as conventional gliders.

Under this rule, those unpowered vehicles weighing 155 pounds or more must be certificated under the appropriate FAR's. No specific comments were received which objected to the 155-pound limitation on unpowered vehicles.

Powered ultralight vehicles

A large number of commenters request that the proposed maximum empty weight of 155 pounds be raised for powered ultralight vehicles. The suggestions range from 180 to 350 pounds. The reasons offered include greater structural integrity, more opportunity for design innovations, and the fact that many of the vehicles presently operated exhibit all of the other characteristics generally attributed to ultralights but weigh more than the proposed weight limit.

The FAA, by review of ultralight advertisements as of March 1982, has concluded that the empty weights of most of those vehicles range from 150 to 250 pounds. It was further concluded that the higher weights resulted from improvements which provide greater structural integrity, better stability, more positive controllability, and other safety-oriented additions which do not derogate the characteristics commonly associated with ultralight operations. Those characteristics are identified as low forward speeds, low wing loadings, low stall speeds, short takeoff and landing capability, and no enclosures around the pilot.

Some commenters suggest that limitations of 220 pounds or 330 pounds be adopted because they are "international standards." This is not correct. Canada, England, and Australia adopted 220 pounds as the maximum weight for a particular category of aircraft. In those countries, even if the weight limitation is met, the aircraft must be certificated and the pilots licensed. The 330-pound limit was established by the Federation Aeronautique Internationale for a category called "microlight aircraft." That category was established merely for the purpose of recording performance achievements of a particular group of aircraft.

The FAA agrees that the weight limitation for powered ultralight vehicles should be raised from the proposed 155 pounds. The 254pound limitation was established because it closely corresponds to commenters' recommendations that the weight limitation be raised to at least 115 kilos, and because the vast majority of current vehicles on the market weigh less than 254 pounds. This weight does not include floats or safety devices intended for deployment in an emergency situation, e.g., parachutes and the harnesses and ballistic package necessary for deployment.

A large number of commenters recognize that, if the weight were raised, some restriction would have to be imposed to ensure that the characteristics associated with ultralights would be preserved. Those commenters include organizations such as the Experimental Aircraft Association (EAA), the Aircraft Owners and Pilots Association (AOPA), and the Professional Ultralight Manufacturers Association (PUMA).

The restrictions they propose range from simple wing loading values to complex aerodynamic formulas. They include maximum wing loading suggestions, minimum wing areas in relation to weight, maximum power capabilities in relation to weight, and calculations of launch mass. Some commenters suggest, and the FAA considered, that the pilot be required to be exposed fully to the relative wind. This requirement was dropped to accommodate cold weather operations and to avoid stifling design and efficiency improvements within the parameters of an ultralight vehicle.

The maximum forward airspeed limitation was selected by the FAA because it is faster than almost all ultralight vehicles currently being sold but still places those vehicles in a significantly slower performance category than conventional aircraft. The determination and enforcement of this speed limitation is within the capability and resources of the FAA under the inspection requirement of the rule.

A number of commenters suggest maximum stall speed restrictions ranging from 18 to 25 miles per hour, believing that this limitation would continue to ensure the safe nature of ultralight vehicles. The FAA believes that the ability of those vehicles to operate from surfaces other than those designed for aircraft is a factor which lessens the potential for collisions and reduces the interference with aircraft operations. A relatively slow stall speed is a major contributing factor in allowing ultralight pilots to operate in a safe manner.

A maximum power-off stall speed of 24 knots was chosen because it encompasses most of the vehicles currently on the market. The stall speed is easily determined through a simple calculation using information which is readily available to the FAA inspector when inspecting a specific vehicle. The total allowable fuel capacity was raised from the proposed 15 pounds to 5 U.S. gallons. The decision to increase the volume of fuel is a direct result of the desire by the FAA, in response to public comments, to ensure that adequate fuel reserves are available for safe flight.

Single Occupant

The rule limits both powered and unpowered ultralight vehicles to a single occupant. A few commenters suggest that two-seat versions be available for carrying passengers or for training purposes. The basis for allowing ultralight vehicles to operate under special rules which do not require pilot and aircraft certification is the "sport" aspect of the operation.

For example, the assumption can be made that a person who elects, without pilot qualifications, to operate an uncertificated vehicle alone is fully aware of the risks involved. This assumption does not hold true of a passenger selected randomly from the general public. Persons in the general public will likely assume that the operator has certificated pilot qualifications.

Because pilot qualifications are not controlled or monitored, the single-occupant requirement is a necessary component in the continuation of the policies which allow the operation of ultralight vehicles free from many of the restrictions imposed on aircraft. Persons wishing to operate two

place vehicles have the availability of existing provisions of the FAR's for conducting such operations.

Recreation or Sport Purposes Only

Recent activities and advertisements in ultralight-oriented publications (included in the docket) imply that commercial operations may be conducted by an uncertificated pilot in an ultralight which has not been certificated as an aircraft. Those types of operations are not allowed under the rule.

Several commenters suggest that ultralight vehicles be limited to sport or recreational purposes only. The position of the FAA has consistently been that these vehicles may be operated for sport and recreation purposes only. The justification for allowing the operation of these vehicles without requiring aircraft and pilot certification has been that this activity is a "sport" generally conducted away from concentrations of population and aircraft operations. Like any sport, the participants are viewed as taking personal risks which do not affect others not involved in the activity.

Section 103.3 Inspection requirements (proposed §101.55)

This section ensures the FAA's authority to inspect ultralight vehicles for compliance with the limits specified in §103.1 and is retained in the final rule as proposed in Notice No. 81-6. A large number of commenters object to the inspection requirements, believing that considerable FAA manpower and resources would be required in this effort. The USHGA and its membership contributed a majority of the objecting comments, citing the remoteness of hang gliding sites as impractical for the FAA to monitor.

Given the current level of ultralight activity, the FAA is confident that enforcement of the provisions of Part 103 can be accomplished with the existing resources. As is the case today, many investigations of suspected violations are prompted by reports received from pilots, air traffic controllers, citizens, and other sources. The FAA foresees no appreciable increase in the number of these reports as a result of this rule.

Section 103.5 Waivers

In proposing to include ultralight operations under Part 101, ultralights would have been eligible for the waiver provisions applicable to all operations under that Part. By removing the ultralight proposal from Part 101, the waiver eligibility for ultralights would have been lost. The FAA has concluded that the ultralight industry and the public would be best served by retention of waiver eligibility for these vehicles.

Thus, §103.5 is added to the final rule, giving the ultralight operator the opportunity to apply for a certificate of waiver from any provisions of Part 103.

Section 103.7 Certification and registration

The intent of the FAA is to provide for safety in the national airspace with a minimum amount of regulation. Accordingly, those vehicles which meet the definition of "ultralight vehicle"' will be exempt from FAA certification and registration requirements. Similarly, pilots of ultralight

vehicles, as defined in this Part, will not be required to possess FAA pilot certificates or airman medical certificates.

While this rule does not, at this time, require airman/aircraft certification or vehicle registration and is premised on the absolute minimum regulation necessary to ensure safety in the public interest, a continuation of burgeoning growth of the ultralight population could necessitate further regulation. The best practices and methods to preclude the need for further Federal regulation appear to at least include: self-regulation and self-policing, safety standards, membership in organizations and associations equipped to function and operate programs approved by the FAA, markings and identification of vehicles, programs including provisions similar to Federal Aviation Regulations relating to aircraft (both operation and airworthiness), etc.

FAA will continue to monitor performance of the ultralight community in terms of safety statistics, growth trends and maturity and, if indicated, will take additional regulatory actions to preclude degradation of safety to the general public while allowing maximum freedom for ultralight operations. In summary, it should be emphasized that the individual ultralight operator's support and compliance with national self-regulation programs is essential to the FAA's continued policy of allowing industry self regulation in these areas.

Pilot Certification

A large number of commenters believe that there should be some requirement that pilots of ultralights be required to exhibit some knowledge and/or experience before being allowed to operate these vehicles. The suggestions range from no requirements to pilot certification under the requirements of Part 61. The general groupings of the comments are: (1) No certification; (2) required ground training on regulations and conventional aircraft operations; (3) required ground training and instructor sign-off for unsupervised solo operations: (4) successful passage of a written test, such as the FAA glider pilot written examination; (5) issuance of an Ultralight Pilot Certificate by the FAA based on satisfactory completion of a examination, and observed performance as the pilot of an ultralight; and (6) conforming to the certification requirements of Part 61 for student and private pilots.

The FAA endorses the ultralight community's efforts to develop and administer, under FAA guidelines, a national pilot certification program. At this time, however, pilots of ultralight vehicles are not required by Federal regulation to be certificated.

Aircraft Registration

Some commenters, primarily State and local governments, recommend that these vehicles be registered and be required to display their registration number. The reasons center around identification of any offenders. The FAA's experience in identification of offenders and processing enforcement action validates their recommendations. The FAA endorses the ultralight community's efforts to develop and maintain, under FAA guidelines, a national registration system which would be immediately accessible to the FAA. However, registration of ultralight vehicles will not be required by Federal regulation at this time.

Aircraft Certification

There are a small number of commenters who recommend additional Federal regulations requiring certification of ultralight vehicles to some design standards. The FAA has consistently refrained from the certification of these vehicles because they were occupied by a single occupant for sport or recreational purposes. This policy is in accord with Federal regulatory policies regarding other sport activities. The pilots of these vehicles accept the responsibility for assuring their personal safety much as the driver of a moped street vehicle or a scuba diver does when engaged in his sport. The FAA has noted and commends the efforts of the USHGA to establish design standards and flight testing of new hang glider designs. The FAA endorses the development of similar standards and testing of new powered designs by the ultralight community. However, the FAA presently has no intent to require certification of these vehicles by Federal regulation.

Subpart B-Operating Rules

Section 103.9 Hazardous operations (proposed §101.7)

This section prohibits any ultralight operator from engaging in activity which jeopardizes the safety of persons or property on the ground or in the air. The prohibition against hazardous flight or dropping of objects is common to the regulations pertaining to civil aircraft, and the FAA is addressing ultralight operations with equivalent stringency.

Section 103.11 Daylight operations (proposed §101.43).

The proposed rule would have limited the operation of ultralights to the hours between official sunrise and official sunset. The limitation on daytime operations was retained with an added provision for twilight operations under certain conditions. Other night-time operations are not allowed.

A large number of commenters request that flight during the twilight periods of the day be allowed since those are prime times to conduct ultralight operations. They state that meteorological conditions are often best during those periods and are characterized by a lack of wind and turbulence. The AOPA believes that calm air is particularly important for the novice flyer and provides an increased safety factor, especially during training when confidence building is essential. Many commenters believe that the available light is generally adequate to allow operations during these periods and that other craft could be safely avoided.

There are some commenters who believe that operations in Alaska should be excluded from the daylight operations section. They allude to the uniqueness of their "normal" day and how ultralight operations would be adversely affected.

Several comments support the original proposal and do not want operations during the nighttime hours. The primary concern centers around the difficulty in seeing these vehicles, especially at the higher altitudes, and the perceived inability of these operations to be conducted safely. The FAA has observed ultralight operations during the twilight periods and has found the light available for such operations to be adequate in many instances. Operators were able to maneuver safely to avoid each other and also effect safe takeoffs and landings. Since most vehicles are operated at nearly the same altitude, they could be easily seen silhouetted against the lighted sky. Operations were conducted in relatively close proximity to each other, and each

operator was readily aware of the others' presence. The mild weather conditions which generally prevailed during the twilight periods combined with the controllability and maneuverability of these vehicles to enhance the safety factor for flight.

The FAA is concerned, however. that unlimited operations of this type could pose a threat to aircraft which operate at higher speeds and higher altitudes. The number of potential encounters between aircraft and ultralights increases significantly as ultralights operate into areas normally traversed by certificated aircraft. Also, the ability of aircraft pilots descending into the lower altitudes to see ultralights would be minimal due to the darkened backdrop of the ground. Pilots would often not be aware of such operations taking place and could easily overrun an ultralight without ever having visual contact.

The FAA has adopted an alternative which provides an acceptable level of safety to aircraft while still allowing ultralights to operate in uncontrolled airspace during this period of the day. The FAA's conclusion on this issue is to disallow ultralight operations in controlled airspace during the period from sunset to sunrise. This affords aircraft operators the margin of safety to which they are entitled and, at the same time, leaves adequate airspace to the ultralight operator during a 30-minute twilight period.

The FAA has determined that the occasional aircraft operation in uncontrolled airspace during the twilight period should not entirely preclude ultralight operations. The visibility from above of ultralights operating at very low levels can be significantly enhanced by the addition of an anticollision light on these vehicles. Such a light would provide the descending aircraft pilot with a distinct indication of the ultralight's presence. Additionally, it would enable ultralight operators to better see and avoid each other.

For the purposes of ultralight operation, an anticollision light is defined as any flashing or stroboscopic device that is of sufficient intensity so as to be visible for at least 3 statute miles. This regulatory approach does not impose on the ultralight owner the economic burden associated with a certificated lighting system. The ultralight must remain in uncontrolled airspace, and the anti-collision light must be operating during the twilight periods whenever the vehicle is in motion. With respect to twilight operations in Alaska, the FAA recognizes that the periods of twilight are significantly different from those experienced in the lower latitudes. A review of the Air Almanac reveals that, in the upper latitudes, some days have no daylight periods but have over 4 hours of civil twilight. Civil twilight is defined as the period between official sunset and sunrise when the sun is less than 6 degrees below the horizon.

Regulations currently exist in Parts 91 and 101 which acknowledge the need to give special allowances for operations in Alaska after sunset, and the FAA has determined that ultralights are entitled to the same consideration. Therefore, a provision to permit ultralight operations in Alaska during civil twilight has been added § 103.11. The requirement to have an operating anticollision light during twilight operations is applicable to operations during this period in Alaska.

Section 103.13 Operations near aircraft and other ultralight vehicles;

Right-of-way rules (proposed § 101.49).

The proposed regulations with respect to ultralight vehicle right-of-way are adopted. An additional provision is added to clarify the right-of-way requirements in situations involving powered and unpowered ultralight vehicles.

The comments regarding right-of-way range from those who believe that unpowered ultralight vehicles should have the right-of-way over all other vehicles and aircraft to those who believe that the requirements of § 91.67 should be adopted, with unpowered ultralights being grouped with gliders and the powered ultralights grouped with airplanes. The most salient reasons cited include lack of maneuvering ability and inability to change location in the air quickly.

The suggestions and associated rationale do not reveal any areas which had not been considered during the formulation of the NPRM. The FAA has determined that uncertificated sport operations should not be given the right-of-way over all other aircraft. The small size and sport nature of the operations is a major factor in that determination it is unlikely that the pilot of aircraft will be able to see the ultralight vehicle as readily as the pilot of the ultralight vehicle will be able to see or hear the larger aircraft. Due to the forward speeds of the majority of aircraft, it may be impossible for the aircraft to make sudden changes of direction required to avoid small objects sighted at close quarters. The FAA recommends that operators engaged in ultralight operations avoid, if possible, areas where significant operations of aircraft are occurring so as to minimize the risk of midair collisions.

Some ultralight operators express concern that, if they are not given the right-of-way over aircraft, the pilots of those aircraft might deliberately fly in close proximity to the ultralights. In situations where this act can be substantiated, an investigation will be initiated to determine whether the pilot of the conventional aircraft operated in a careless or reckless manner in violation of § 91.9.

Some commenters recommend the establishment of areas where ultralight operations could be conducted and all aircraft operations would be prohibited. While the FAA has undertaken to identify locations on aeronautical charts where a specialized aeronautical activity, such as parachute jumping or gliding, is being conducted, no action is anticipated which would restrict other types of aeronautical activities in those areas and, similarly, no such action is contemplated for ultralights.

Section 103.15 Operations over congested areas (proposed §101.47).

The proposed prohibition of ultralight vehicle operations over congested areas is retained in the final rule. The comments favoring an easing of the proposed rule focus on three main areas: (1) Those who favor permitting operations with a minimum altitude ranging from 1,000 to 3,000 feet AGL; (2) those requesting that the minimum altitude requirements of §91.79 be allowed: and (3) those who believe that no minimum altitude should be specified, especially for unpowered vehicles, due to the short field ability and small size of the vehicles.

The representatives of cities and towns who commented generally favor the prohibition, believing that uncertificated aviation activities have no place over congested areas.

The FAA's position is based on the fact that ultralight vehicles are not certificated as airworthy by any approved method and are flown by uncertificated pilots for sport or recreational purposes only. Similar limitations apply to the operations of experimental and restricted category aircraft based on catastrophic incidents which have occurred in the past. The potential for such an

incident makes the general issuance of the suggested authorization unacceptable. The FAA believes that concentrations of the general public must be protected from the possible dangers inherent in the operations of vehicles of uncertificated, possibly unproven designs. In specific limited instances, with appropriate operational limitations, ultralight operations may be approved over congested areas, through the waiver provisions of §103.5.

Section 103.17 Operations in certain airspace (proposed §101.45). The NPRM proposed to require the ultralight operator to obtain authorization prior to operating within airport traffic areas, control zones, terminal control areas, and positive controlled airspace.

Operators of aircraft commented that the speed and visibility of ultralights are incompatible with other operations and that they should not be allowed at all in those areas. Some even suggest that a maximum operating altitude, such as 3,000 feet AGL, be imposed on all ultralight operations. The FAA shares the concern expressed by pilots who are wary of the ability to intermix faster aircraft safely with the relatively slow ultralights; but, experience has shown that aircraft of significantly different performance characteristics can be accommodated when operations are conducted in accordance with specific authorizations. There is considerable precedence in the form of glider operations, hot air ballooning. and parachuting being conducted while aircraft safely transit the area. Historically, the greatest danger comes not from performance variables, but from operations unknown to the pilot or controller. The requirement to gain authorization before entering these airspace areas enhances the safety to all airspace users. The FAA has concluded that ultralight vehicles in compliance with the provisions of 103.17 will be able to operate safely in those airspace areas.

Although the subject was not addressed in the NPRM, some commenters voice concern about ultralight operations conducted at or near uncontrolled airports, with many persons noting a need to develop standard operating procedures. The FAA agrees with the need to establish a compatible method of operation at uncontrolled airports but believes that the variables associated with each locality (terrain, runway configuration, and the physical properties of the airport combine in such a manner to preclude a generalized nationwide regulatory approach. The FAA has concluded that such operations could be handled much more efficiently by airport managers developing local procedures in concert with the ultralight community. In this way the available facilities can be used to the full extent while operational safety is maintained. Additionally. the interaction of the ultralight operators and the airport managers will serve as a basis for mutual understanding of the role this growing segment of aviation will play in the years ahead. The FAA encourages and supports efforts to reach such agreements and has been working with user groups in the development of guidelines for ultralight operations at uncontrolled airports.

Section 103.19 Operations in prohibited or restricted areas.

In the NPRM, requirements for operations of ultralights were included under the provisions of §101.5. In the final rule, the requirement for ultralight operators to obtain authorization prior to operating in prohibited or restricted areas is retained and restated under §103.19. Prohibited areas have been developed to provide for the safety and security of operations being conducted and to segregate activities considered to be hazardous to non-participating aircraft. Such operations in these areas include military and presidential security, flight training and testing, experimental weapons testing, and the launch and recovery of rocket-powered vehicles.

Many commenters recognize the need to limit access to these operating areas and accept the requirement to obtain permission prior to operating in these areas. A few commenters believe that this restriction should not apply to them and that ultralight vehicles should be allowed to operate at their own risk.

The FAA has determined that allowing any aeronautical activity to enter prohibited or restricted areas without prior authorization would derogate the purpose for which these areas were established. Avoidance of such areas by ultralight operators is not viewed as imposing a significant burden on ultralight operations .

Section 103.21 Visual reference to the surface (proposed §101.51).

NPRM No. 81 - 6 proposed that ultralight operators be required to maintain visual reference to the surface during all flight operations. This would ensure that the operator of an ultralight would have the opportunity to descend and land safely at any time without entering obscuring weather phenomena. Many commenters support the proposal as reasonable and representative of normal ultralight operations. They recognize the possibility of being caught "on top" and the danger, both to themselves and to other airspace users, of trying to descend through a layer of clouds. A few commenters believe that visual reference to the surface is necessary only while climbing or descending and not while in level flight.

The FAA has determined that visual reference with the surface is necessary at all times. Experience with certificated aircraft has shown that many pilots, with fully instrumented aircraft, have been caught "on top" and have required assistance from Air Traffic Control to descend safely. Flying "on top" or between cloud layers often presents visual illusions which cannot be verified without instrumentation. The effect of these illusions is to disorient the airman spatially, with a resulting loss of control of the aircraft. It takes a well-trained and disciplined pilot to ignore what information the human senses are providing and rely on the instrumentation aboard the aircraft.

In the case of ultralights, there is relatively little, if any, instrumentation with which to confirm the flight attitude of the vehicle. Further, if the ultralight operator should get caught "on top" there is no alternative available but to descend unannounced through the clouds. The ultralight operator would be risking not only his own life, but the lives of persons who rely on the safeguards inherent in certificated aviation.

The FAA has determined that inclusion in the final rule of the requirement to maintain visual reference with the surface is necessary to reduce the potential for collisions and ensure the safe operation of ultralight vehicles.

Section 103.21 Flight visibility and cloud clearance requirement (proposed § 101.53).

The flight visibility and cloud clearance requirements proposed in the NPRM are the same as those under §91.105, the basic minimums for VFR flight operations by fixed-wing aircraft. Since ultralight vehicles will be sharing the same airspace, the FAA has determined it is practical to apply the same operating minimums.

Many commenters to this proposal are receptive to the similarity in visibility requirements for all airspace users. Many ultralight operators indicate an appreciation for the inherent safety in being able to see and avoid obstructions and other aeronautical activities. Establishment of

specific visibility standards is viewed as enhancing the legitimacy and the utility of ultralight operations.

Some commenters believed that the distance from clouds should be reduced to "clear of clouds." Their basis for such a change centers around the difficulty in determining actual distances from clouds.

Other commenters suggest that hang gliders be allowed to continue their practice of operating near and in the base of clouds. Their rationale is based on the added lift available from being in close proximity to cumulous clouds. Some hang glider operators fear that the restriction on in-cloud operations would eliminate their ability to vie for long-distance and high-altitude records. The FAA cannot support the operation of ultralights in or near clouds. A specific distance from clouds is required when operating in controlled airspace, primarily due to the presents of aircraft conducting instrument flight operations through the clouds. The cloud clearance requirements serve as a practical buffer to reduce the possibility of having an aircraft exit the clouds on an unalterable collision course. Operations too close to clouds does, in effect, cause a blind side in the aviator's vision. Operation in and near clouds severely restricts the ultralight operator's ability to see and avoid, an ability that is paramount in allowing ultralight operations to take place.

In maintaining a safe distance from clouds, the FAA has concluded that Ultralight operators can reasonably approximate, when operations are being conducted, the required distance from clouds. Experience with other segments of aviation has shown that it is readily apparent that, when operations approach an unsafe distance from clouds and adherence to the prescribed minimum distance determination becomes relatively easy. Therefore, retention of the flight visibility and clouds clearance requirements, as proposed, is essential for maintaining airspace safety.

Adoption of the Amendment

Accordingly, the Federal Aviation Regulations (14 CFR Chapter 1) are amended, effective October 4, 1982, by adding to Subchapter F (14 CFR Chapter 1) a new Part 103. (Secs. 307,313(a), 601(a), 602 and 603, Federal Aviation Act of 1958 (49 U.S.C. §§ 1348, 1354(a), 1421(a), 1422, and 1423; sec. 6(c), Department of Transportation Act (49 U.S.C. § 1655(c)).

NOTE: The FAA has determined that this regulation is not a major rule under executive Order 12291. Because the rule will regulate a new user segment and because of substantial public interest, it has been determined that it is a significant rule pursuant to the Department of Transportation Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). The total projected costs of this rule may be found in a copy of the regulatory evaluation contained in the public docket. A copy of that evaluation may be obtained by contacting the person identified above under the caption "FOR FURTHER INFORMATION CONTACT." It is certified under the criteria of the Regulatory Flexibility Act that this rule will not have a significant economic impact on a substantial number of small entities. There are very few small entities involved in ultralight vehicle activities and the majority of those will be unaffected by the implementation of this rule.