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Comments

FAA REGULATION OF ULTRALIGHT VEHICLES

SUDIE THOMPSON

A RELATIVELY NEW form of sport and recreational aviation has swept the aviation industry - ultralights. Ultralights are the first airplanes to have been developed and marketed as "air recreational vehicle[s]."¹ Powered ultralights are featherweight planes which cost between \$2,800 and \$7,000.² Unpowered ultralights are most frequently called hang gliders.³ It is estimated that the worldwide total of powered and unpowered ultralights of all types is 25,000,⁴ and one source predicts that the world total of 20,000, powered ultralights will soon double.⁵ An October, 1981, article places the Federal Aviation Administration's (FAA) estimate of the number of powered ultralights flying in the United States alone at about 2,500.⁶ Less than one year later the Experimental Aircraft Association (EAA) and the FAA increased their estimates of the number of operational powered and unpowered ultralights (excluding true hang gliders) to 10,000.⁷

¹ Markowski, *Ultralight Airplanes*, SCI. AM., July 1982, at 62.

² *Id.*

³ *Id.*

⁴ Heiman, *Taking a Successful Flier*, NATION'S BUS., Nov. 1982, at 74.

⁵ *Around the Mall and Beyond*, SMITHSONIAN, Dec. 1982, at 23, 26.

⁶ Moll, *Ultralights: The FAA Makes Its Move*, FLYING, Oct. 1981, at 14, 15.

⁷ Parke, *Washington Regulators Tackle the Ultralights*, FLYING, Feb. 1982, at 56.

I. REGULATION OF ULTRALIGHTS BECOMES NECESSARY

Documenting the exact number of operational ultralight aircraft is difficult at best. Bernard Geier, Manager of the General Aviation and Commercial division of the FAA, stated, "We get estimates from 10,000 to 20,000 but as the numbers increase, you get a bigger potential for affecting air commerce. We had to make some rules."⁸ Responding to this need, the FAA has promulgated rules which leniently regulate the operation of ultralights.⁹ Federal Aviation Regulation (FAR) part 103¹⁰ governing ultralight vehicles and their operation became effective October 4, 1982.¹¹ Through regulations, the FAA has attempted to "prescribe only the minimum regulations deemed necessary without reducing safety."¹²

In the not too distant past, hang gliders were simple airfoils¹³ launched from a steep hillside or cliff.¹⁴ If the pilot managed to catch some lifting winds, he could glide several hundred feet.¹⁵ This was not the sort of "flight" the FAA chose to regulate.¹⁶ While some purists still fly basic hang gliders, the sport "eventually lost its innocence."¹⁷ The most publicized flight of a powered hang glider was made by John

⁸ Marden, *The Bird Men*, 164 NAT'L GEOGRAPHIC 198, 213 (Aug. 1983).

⁹ Ultralight Vehicles; Operating Requirements, 14 C.F.R. pt. 103 (1983). These regulations became effective October 4, 1982. *Id.*

¹⁰ *Id.*

¹¹ *Id.*

¹² North, *FAA Moves to Simplify, Update Aviation*, AVI. WEEK & SPACE TECH., March 29, 1982, at 40. The commentator states:

[The] Federal Aviation and Administration's role in the regulation of the aviation industry is undergoing a basic change, as reflected in two recent rulemaking proposals and others contemplated by the agency. The FAA has made a push under the Reagan Administration's regulatory policy to simplify regulations that have become burdensome to the aviation industry while bringing old regulations in line with current usage and technology.

Id.

¹³ AVIATION AND SPACE DICTIONARY 22 (1961). An air foil is defined as "[a]ny surface, such as an airplane wing, aileron, or rudder, etc., designed to obtain a useful reaction from the air through which it moves." *Id.*

¹⁴ Moll, *supra* note 6, at 14.

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ *Id.*

Moody at the Experimental Aircraft Association's 1976 fly-in convention at Oshkosh, Wisconsin.¹⁸ Moody, an electrical engineer and hang glider pilot, mounted a Go-Kart engine on his hang glider.¹⁹ The FAA at first required Moody to obtain a student pilot's license and license his craft as a homebuilt, experimental airplane.²⁰ The FAA later modified these requirements and declared that "foot-launchable aircraft are hang gliders, albeit powered, thus freeing pilot and aircraft from all but air traffic regulations."²¹ In the eight years since Moody's flight, an evolution in ultralights marked by larger engines, more weight, higher speeds and greater complexity has occurred.²² The advent of powered ultralights, capable of taking off and launching on rolling wheels, and capable of 100 mile cross country flights at altitudes above 10,000 feet,²³ made FAA regulation of some sort a necessity.

In July, 1981, the FAA published a notice of proposed rulemaking,²⁴ with the proposed regulations designed to encompass the operating requirements for hang gliders and other ultralight vehicles in the United States.²⁵ The background portion of the proposed regulations traced the FAA's monitoring and policy decisions concerning hang gliders.²⁶ As a result of a 1974 FAA study, the FAA determined that at that time "formal regulation of hang gliders and hang glider

¹⁸ Steenblik, *In Reinventing the Small Airplane, Less Can Be More*, SMITHSONIAN, Nov. 1980, at 113.

¹⁹ Markowski, *supra* note 1, at 64. Moody's only aim was to be able to climb to altitudes where he could turn the engine off, glide, and restart the engine when he needed to climb again. *Id.*

²⁰ Steenblik, *supra* note 18 at 113.

²¹ *Id.*

²² *Id.* The author states, "Tailless models have sprouted tails; pilots, who once steered by shifting their weight, now are opting for full aerodynamic controls." *Id.*

²³ Federal Aviation Administration, Dept. of Transportation, Notice No. 8440.28, at 1 (June 9, 1983) [hereinafter cited as Notice No. 8440.28].

²⁴ 46 Fed. Reg. 38,472 (1981).

²⁵ *Id.* Introductory comments to the regulation state, "The 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." *Id.*

²⁶ *Id.* at 38,473.

operations was not needed."²⁷ Rather, hang glider operators, manufacturers, and associations were relegated to self-policing in conjunction with FAA assistance to promote safety.²⁸ But as the sport of hang gliding has progressed to the inclusion of powerplants, it has moved well beyond the state of the art contemplated by the FAA in 1974.²⁹ The increase in the number of hang gliders, coupled with the advanced technology incorporated in the vehicles, has made it possible for the vehicles to operate at altitudes and in areas previously utilized by certified aircraft and operators only.³⁰ The proposed rule illustrates the potential airspace conflict by citing three instances of near-miss situations between hang gliders and aircraft.³¹

The FAA determined that ultralight activity required a regulatory basis to prevent similar events from occurring.³² The FAA admitted that hang gliders operating "without regulatory restrictions are not consistent with the responsibility of ensuring the safety of air carrier and other aircraft."³³ Notwithstanding the potentially hazardous situation, however, the FAA was firmly committed to maintaining the sport and recreational flavor of ultralight operation by refusing to require airworthiness and pilot certification requirements.³⁴

²⁷ *Id.*

²⁸ *Id.*

²⁹ *Id.*

³⁰ *Id.*

³¹ *Id.* at 38,474. The situations cited were:

(1) 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.

(2) 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.

(3) A NASA Alert Bulletin (AB-79-86) described an air carrier flight on downwind for landing at Raleigh-Durham, North Carolina, which flew between two hang gliders without time for evasive action.

Id.

³² *Id.*

³³ *Id.* The proposed regulation states, "If adopted, the regulation will act to deter flights with hang gliders that would present a serious danger to aircraft operating in their vicinity. Additionally, it would give the FAA a regulatory basis for action, if necessary." *Id.*

³⁴ *Id.*

Manager of the General Aviation and Commercial Division of the FAA, Bernard Geier, stated, "We consider this a sport, and we don't want to overregulate it. The FAA is not responsible for protecting the pilot against himself; it is responsible for protecting the public and the airspace."³⁵

II. THE FAA'S ULTRALIGHT REGULATIONS

A. *What Is An Ultralight?*

The ultralight regulations classify the vehicles in powered and unpowered categories.³⁶ As the rules were originally proposed, FAR part 91³⁷ defining the operational requirements of aircraft, was to be amended to exclude vehicles which would fall within the part 101 definition of ultralight vehicles.³⁸ Under the proposed rules, vehicles which failed to meet all the proposed specifications of part 101 (due to weight, fuel capacity, occupancy capacity, or already being certified as airworthy)³⁹ would have been subject to the certification and operating requirements of aircraft.⁴⁰ The FAA's adoption of the term "ultralight vehicle" is the generic term used to embrace all varieties of hang gliders and motorized gliders that meet the part 103 specifications.⁴¹

In defining ultralights, the FAA sought "to achieve a realistic criteria (sic) that can be easily understood and determined by even the least experienced individual involved in the activity."⁴² The FAA deemed weight one primary criterion for

³⁵ Marden, *supra* note 8, at 213.

³⁶ 47 Fed. Reg. 38,770 (1982) (codified at 14 C.F.R. pt. 103) (effective Oct. 4, 1982).

³⁷ General Operating and Flight Rules, 14 C.F.R. pt. 91 (1983).

³⁸ 46 Fed. Reg. 38,472, 38,474 (1981). Vehicles not meeting the proposed regulations were to be subject to parts 21, 45, 47, 61, and 91 of the Federal Aviation Regulations governing certification and operation. *Id.*

³⁹ See text accompanying note 98.

⁴⁰ 46 Fed. Reg. 38,472, 38,474 (1981).

⁴¹ *Id.*

⁴² *Id.* The FAA comment accompanying the proposed regulation states:

In the past, the primary criteria (sic) for classifying an unpowered hang glider was the vehicle's capability of being foot-launched and landed. As innovation and design advanced, this criteria (sic) has become more and more difficult to determine and apply, especially with the introduction of complex and powered vehicles. Thus it has been rejected as a basis for classifying ultralight vehicles under this proposal.

defining an ultralight vehicle,⁴³ as other factors considered by the FAA (total weight, engines, horsepower, and wing loading), shared weight as a common element.⁴⁴ The FAA first proposed a rule which would have limited the definitional ultralight to single-occupant designs which weighed less than 155 pounds (dry, empty weight) with a fuel capacity of 15 pounds or less, and which carried no airworthiness certificate.⁴⁵ Of the more than 2,500 comments received in response to the proposed FAA rule,⁴⁶ many respondents suggested that the proposed maximum weight be increased for powered ultralights.⁴⁷ The FAA reviewed ultralight advertisements and found that the empty weight of most such vehicles exceeded the proposed 155 pound limit.⁴⁸ The FAA concluded that the higher weights resulted from control and safety-oriented additions which did not contradict the characteristics of ultralights.⁴⁹ The weight maximum for powered ultralights was raised to a 254 pound limitation⁵⁰ not including safety devices intended for deployment in an emergency or floats used for landing on water.⁵¹ The proposed 155

Id.

⁴³ *Id.* at 38,475.

⁴⁴ *Id.* at 38,474-75. Regarding weight, the comment accompanying the proposed regulation states that "use of weight as a limiting factor will not unduly inhibit innovative and reasonable design developments" *Id.* at 38,475. The proposed regulation further states that "[l]imiting the weight will have much the same effect as regulating the other factors but without the complexities." *Id.*

⁴⁵ *Id.* at 38,474. Fifteen pounds of fuel is approximately 2.5 U.S. gallons of gasoline. *Id.* at 38,475.

⁴⁶ 47 Fed. Reg. 38,770 (1982) (codified at 14 C.F.R. § 103.1(d)) (effective Oct. 4, 1982).

⁴⁷ *Id.* at 38,771. The suggestions for the maximum weight limit ranged from 180 to 350 pounds. The commentary to the regulation states, "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." *Id.*

⁴⁸ *Id.*

⁴⁹ *Id.* Those characteristics of ultralight operation were identified as "low forward speeds, short takeoff and landing capability and on (sic) enclosure around the pilot." *Id.*

⁵⁰ 14 C.F.R. § 103.1 (1983). The 254-pound limitation was chosen by the FAA at the urging of many commentators and because the majority of vehicles currently marketed weigh less than 254 pounds. 47 Fed. Reg. 38,770, 38,771 (1982) (codified at 14 C.F.R. Pt. 103) (effective Oct. 4, 1982).

⁵¹ 47 Fed. Reg. 38,770, at 38,771 (1982) (codified at 14 C.F.R. Pt. 103) (effective

pound weight maximum for unpowered ultralights was retained.⁵²

The maximum capacity of five U.S. gallons for a powered ultralight⁵³ includes all available space for usable and unusable fuel.⁵⁴ Fuel located in the lines, pump, strainer, or carburetor is not attributed to the calculation of fuel.⁵⁵ Any ultralight which exceeds the five gallon fuel tank capacity is not eligible to operate as a part 103 ultralight vehicle.⁵⁶

Powered ultralights⁵⁷ must also meet both maximum level flight speed and power-off stall speed requirements to qualify under FAR part 103.⁵⁸ The fifty-five knots maximum level flight speed specified in section 103.1(e)(3) is not a speed limit, but rather a performance limitation.⁵⁹ The ultralight "cannot be capable of driving through the air in level flight

Oct. 4, 1982). The FAA has published a draft of Advisory Circular 103-XX for comment. The proposed Advisory Circular is intended to "provide[s] guidance to the operators of ultralights in the United States." Federal Aviation Administration, U.S. Dept. of Transportation, *The Ultralight Vehicle*, Advisory Circular (AC) 103-XX at 1 (Discussion Draft 19) [hereinafter cited as Advisory Circular (AC) 103-XX].

⁵² 47 Fed. Reg. 38,770, 38,771 (1982) (codified at 14 C.F.R. pt. 103) (effective Oct. 4, 1982).

⁵³ 14 C.F.R. § 103.1(e)(2) (1983). Regarding fuel capacity, the regulation states, "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." 47 Fed. Reg. 38,770, 38,772 (1982).

⁵⁴ Advisory Circular (AC) 103-XX, *supra* note 51 at 19(a). The advisory circular elaborates on the function of advisory circulars, stating, "The FAA issues advisory circulars to assist and inform the public on matters affecting aviation. Advisory circulars are issued in a numbered-subject system corresponding to the subject areas of the FAR." Federal Aviation Administration, U.S. Dept. of Transportation, *Ultralight Vehicle Operations - Airports, Air Traffic Control, and Weather*, Advisory Circular (AC) 103-6 at 22 (1983) [hereinafter cited as Advisory Circular (AC) 103-6].

⁵⁵ Advisory Circular (AC) 103-XX, *supra* note 51, at 19(a).

⁵⁶ *Id.* at 19.

⁵⁷ *Id.* at 17(a). These include "ultralight airships, helicopters, gyrocopters, and airplanes." *Id.*

⁵⁸ 14 C.F.R. § 103.1(e)(3) and (4) (1983). The vehicle must "not [be] capable of more than 55 knots calibrated airspeed at full power in level flight." 14 C.F.R. § 103.1(e)(3) (1983). The vehicle must have a "power-off stall speed which does not exceed 24 knots calibrated airspeed." 14 C.F.R. § 103.1(e)(4) (1983).

⁵⁹ Advisory Circular (AC) 103-XX, *supra* note 51, at 20(a). The advisory circular explains the performance limitation by stating:

It is not a speed limit that a pilot has to observe. The ultralight, as configured (exposed drag areas, engine-power output, and propeller efficiency), cannot be capable of driving through the air in level flight at full power faster than 55 knots. It is also not a structural never-exceed

at full power faster than fifty-five knots."⁶⁰ This forward air-speed maximum was selected by the FAA because it is faster than most currently manufactured ultralights, yet is slower than conventional aircraft.⁶¹ An ultralight vehicle's power-off stall speed cannot exceed twenty-four knots.⁶² Again, the figure was chosen by the FAA because it "encompasses most of the vehicles currently on the market."⁶³

Many commentators objected to the fact that "pure" unpowered hang gliders were to be subject to the same definition as powered hang gliders.⁶⁴ The FAA, in its final rule, however, included unpowered hang gliders in part 103,⁶⁵ retaining the originally proposed 155-pound weight maximum for the unpowered vehicles.⁶⁶ Consequently, unpowered vehicles weighing less than 155 pounds need not be certified.⁶⁷ The Balloon Federation of America, a powerful source of balloon self-regulation, has petitioned the FAA to amend FAR part 103 to specifically exclude lighter-than-air vehicles from part 103 fearing that balloons which qualify under ultralight regulations instead of balloon regulations will be far more dangerous to the balloon operators and innocent bystand-

speed (V_{ne}). The ultralight may well be structurally capable of higher airspeeds.

Id.

⁶⁰ *Id.*

⁶¹ 47 Fed. Reg. 38,770, 38,772 (1982).

⁶² 14 C.F.R. § 103.1(e)(4) (1983). Twenty-four knots equals twenty-eight miles per hour. Advisory Circular (AC) 103-XX, *supra* note 51, at 21.

⁶³ 47 Fed. Reg. 38,770, 38,772 (1982). The regulation states, "The stall is easily determined through a simple calculation using information which is readily available to the FAA inspector when inspecting a specific vehicle." *Id.* The FAA's Advisory Circular AC-103 draft includes acceptable means for determining the power-off stall speed. Advisory Circular (AC) 103-XX, *supra* note 51, at 21(a).

⁶⁴ 47 Fed. Reg. 38,770, 38,771 (1982).

⁶⁵ 14 C.F.R. § 103.1(d) (1983).

⁶⁶ 47 Fed. Reg. 38,770, 38,771 (1982) (codified at 14 C.F.R. § 103.1(d)) (1983).

⁶⁷ *Id.* The regulation states that "[n]o specific comments were received which objected to the 155 pound limitation on unpowered vehicles." 47 Fed. Reg. 38,770, 38,771 (1982). In computing the empty weight of gliders, the fuselage, wings, structure, control surfaces, harnesses, and landing gear are included; parachutes and harnesses are not included. Advisory Circular, AC 103-XX, *supra* note 51, at 16(c)(1). In computing the weight of free balloons, the envelope, lines, harnesses, gondola, burner, and fuel tank are included; parachutes and harnesses are not included. *Id.* at 16(c)(2). The weight of fuel in hot-air balloons or removable ballast in gas-balloons is not included. *Id.*

ers.⁶⁸ Balloons are currently rigidly regulated by FAR, part 101⁶⁹ and part 31.⁷⁰

To maintain the status of an ultralight vehicle under part 103, both unpowered and powered vehicles must be intended for operation only by a single occupant.⁷¹ Some commentators urged the FAA to abandon the single-occupancy requirement and permit two-seater versions of ultralight vehicles to be used in training or in carrying passengers.⁷² The FAA, however, specifically chose not to allow two-seater ultralights to operate under part 103 absent a waiver.⁷³ The whole basis of the FAA's decision to allow ultralights to operate under extraordinary rules which do not require pilot and aircraft certification is the "sport" aspect of their operation.⁷⁴ The FAA assumed that one who without pilot certification chooses to operate an uncertified vehicle does so at his own risk.⁷⁵ A passenger, however, may likely believe that an ultralight operator is a certified pilot. Therefore, in the FAA's view, the passenger may not fully appreciate the risk.⁷⁶

An ultralight with provisions for more than one occupant must be operated as an aircraft even when operated by only one person.⁷⁷ Some ultralights are manufactured with a bench seat with one seatbelt which are advertised as two-seat-

⁶⁸ 47 Fed. Reg. 46,293, 46,293-95 (1982). Removal of small manned balloons from the part 103 definition of ultralight vehicles would place them under the same aircraft, equipment, and pilot certification requirements applicable to all other balloons. *Id.* at 46,293. The light balloons that the Federation anticipates will be built to qualify for part 103 will present danger to the public due to a lack of regard for design safety, and a sacrifice of safety for weight. *Id.* at 46,295.

⁶⁹ See generally *Moored Balloons, Kites, Unmanned Rockets and Unmanned Free Balloons*, 14 C.F.R. §§ 101.1 - 101.39 (1983).

⁷⁰ See generally *Airworthiness Standards: Manned Free Balloons*, 14 C.F.R. §§ 31.1-31.85 (1983).

⁷¹ 14 C.F.R. § 103.1(a) (1983).

⁷² 47 Fed. Reg. 38,770, 38,772 (1982).

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ *Id.*

⁷⁶ *Id.* Comments by the FAA in its final rule state that "[b]ecause 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." *Id.*

⁷⁷ Notice No. 8440.28, *supra* note 23 at 3.

ers.⁷⁸ These two-seater aircraft do not qualify as part 103 ultralights.⁷⁹

Section 103.5 of the ultralight regulations provides an ultralight operator the opportunity to apply for a written certificate of waiver by the Administrator of the FAA from any provisions of part 103.⁸⁰ The FAA has received and granted petitions for exemptions from the single-occupancy requirement for limited training purposes.⁸¹ The FAA has issued instructions to FAA Flight Standards personnel that when such a waiver is granted, the "exemption [shall] contain explicit operating conditions, vehicle placarding, and recordkeeping requirements, and the individuals allowed to perform this training will be controlled."⁸²

Only vehicles used for recreation or sport purposes can qualify as ultralight vehicles.⁸³ The FAA justifies allowing these vehicles to operate without aircraft or pilot certification by characterizing the operation as "sport," which is "generally conducted away from concentrations of population and aircraft operations."⁸⁴ The FAA expressed concern that recent activities and publications indicated that ultralights uncertified as aircraft were being used for commercial activities while operated by uncertified pilots.⁸⁵ The FAA has given field personnel guidelines to determine whether vehicles are being used purely for sport or recreation.⁸⁶ Examples of clearly prohibited activities include patrolling fence lines, advertising, banner towing, agricultural spraying, or parcel car-

⁷⁸ Advisory Circular (AC) 103-XX, *supra* note 51. No maximum seat width standards have been established. As most manufacturers are making seats eighteen to twenty-two inches wide, the FAA has stated that a seat wider than twenty-two inches raises a question as to whether the ultralight is designed for double occupancy. *Id.*

⁷⁹ *Id.*

⁸⁰ 14 C.F.R. § 103.5 (1983).

⁸¹ Advisory Circular (AC) 103-XX, *supra* note 51, at 13(c). Such groups as the Aircraft Owners and Pilots Association, Air Safety Foundation, Experimental Aircraft Association, and the United States Hang Gliding Association have received single occupancy waivers. *Id.*

⁸² Notice No. 8440.28, *supra* note 23 at 4.

⁸³ 14 C.F.R. § 103.1(b) (1983).

⁸⁴ 47 Fed. Reg. 38,770, 38,772 (1982).

⁸⁵ *Id.*

⁸⁶ Notice No. 8440.28, *supra* note 23, at 6(b)(1).

riage for hire.⁸⁷ Some non-recreational uses of ultralight vehicles ("public aircraft" uses and aerial agricultural uses) are permissible when in compliance with special requirements.⁸⁸ And as previously stated, operators can seek waivers

⁸⁷ *Id.* The proposed Advisory Circular gives examples of situations in which some forms of compensation would be allowed under the recreation and sport limitation. Advisory Circular (AC) 103-XX, *supra* note 51 at 14(d). These guidelines are:

(1) *Rental of ultralight vehicles.* Renting an ultralight vehicle to another person is permissible.

(2) *Providing instruction for hire.* Persons giving instruction in the use of ultralight vehicles are not prohibited from receiving compensation for their services.

(3) *Receiving a purse or prize.* Persons participating in sport or competitive events involving the use of ultralights are not prohibited from receiving money or some other form of compensation in recognition of their performance.

(4) *Authoring books about ultralights.* Persons are not prohibited from flying ultralights and then authoring books about their experiences, for which they ultimately receive compensation.

(5) *Receiving discount on purchase of an ultralight.* There is no prohibition which would prevent you from taking advantage of any discount on the price of an ultralight a company might offer where its logo or name appears on a portion of the vehicle. You cannot, however, enter into any agreement which might specify the location, number, or pattern of flights contingent on the receipt of that discount. Any operation under such an agreement could not be conducted under Part 103.

(6) *Participation in airshows and events.* You may participate in airshows and other special events where persons are charged for viewing those events, so long as you receive no compensation for your participation. This does not hold true where you stand to benefit directly from the proceeds as the organizer or producer of the event. However, persons operating ultralight vehicles in sport competitive events are not prohibited from receiving money or some other form of compensation in recognition of their performance.

Id.

⁸⁸ Advisory Circular (AC) 103-XX, *supra* note 51, at 35. These exceptions are:

(a) *"Public" aircraft.* A certificated ultralight may be used exclusively in the service of a Federal, state, or local government without an airworthiness certificate. The pilots also do not have to hold pilot certificates.

(1) It must be properly registered with the FAA and display appropriate registration markings, and

(2) All operations must be conducted in accordance with the applicable operating and flight rules of Part 91.

(b) *Aerial agricultural application.* A farmer owning an amateur-built experimentally certificated aircraft may use that aircraft for aerial agricultural applications over his/her own property, provided that,

(1) The ultralight must be certificated as an amateur-built aircraft and must not have any operating limitations prohibiting agricultural operations;

to the sport/recreation limitation under the regulations.⁸⁹ The FAA has stated, however, that only exemptions for two occupant training flights or short-term special events are envisioned.⁹⁰

B. *Registration and Certification*

In keeping with the FAA's intention to exert a minimal amount of regulation,⁹¹ vehicles which meet the definition of "ultralight vehicle" in section 103.1 are exempt from FAA certification and registration requirements.⁹² Further, pilots of ultralight vehicles are exempt from FAA pilot certification or airman medical certification.⁹³ The FAA cautions would-be ultralight operators that:

[c]ertificated aircraft are designed, flight tested, manufactured, maintained, and operated under Federal regulations intended to provide an aircraft of consistent performance, controllability, structural integrity, and maintenance. An ultralight vehicle is not subject to Federal aircraft certification and maintenance standards There is no assurance that a particular ultralight vehicle will have consistent performance, controllability, structural integrity, or maintenance.⁹⁴

As the ultralight vehicle definition specifically excludes vehicles holding airworthiness certificates,⁹⁵ an ultralight which has an airworthiness certificate is considered an aircraft and subject to all applicable aircraft regulations.⁹⁶ An ultralight cannot operate interchangeably as an aircraft and as a sport

(2) The pilot must hold at least a private pilot certificate and successfully complete a knowledge and skill test as specified in § 137.19(e); and

(3) The farmer must hold at least a Private Agricultural Operator Certificate under Part 137 and all operations must be conducted in accordance with that regulation.

Id.

⁸⁹ 14 C.F.R. § 103.5 (1983).

⁹⁰ Notice No. 8440.28, *supra* note 23, at 10(a).

⁹¹ 47 Fed. Reg. 38,770, 38,772 (1982).

⁹² 14 C.F.R. § 103.7 (1983).

⁹³ *Id.*

⁹⁴ Advisory Circular (AC) 103-XX, *supra* note 51 at 3(a).

⁹⁵ 14 C.F.R. § 103.1(c) (1983).

⁹⁶ Notice No. 8440.28, *supra* note 23, at 6(c)(2).

vehicle within the ultralight definition.⁹⁷ An operator wishing to operate an airworthiness certified ultralight as an ultralight must turn in the airworthiness certificate to the issuing authority.⁹⁸

State and local governments recommended to the FAA that ultralight vehicles be registered and display registration numbers in order to identify vehicles not complying with the regulations.⁹⁹ The FAA conceded that registration would facilitate regulation enforcement.¹⁰⁰ The FAA, however, chose to maintain its commitment to minimal regulation and to preempt state and local governments from establishing regulations concerning registration.¹⁰¹ The federal preemption does not preclude state or local regulation intended for taxation.¹⁰²

Commentators who advocated some level of certification of ultralight pilots¹⁰³ and some design standard certification for ultralight vehicles were unable to persuade the FAA of their view.¹⁰⁴ Instead, the FAA steadfastly chose to maintain its position that since ultralight operation is a sport, pilots of ultralights "accept the responsibility for assuring their personal safety much as a driver of a moped street vehicle or a scuba diver does when engaged in his sport."¹⁰⁵ The FAA deemed ultralight operation something which should be self-regulated

⁹⁷ *Id.* at 6(c)(1).

⁹⁸ Advisory Circular (AC) 103-XX, *supra* note 51, at 15(b).

⁹⁹ 47 Fed. Reg. 38,770, 38,773 (1982).

¹⁰⁰ *Id.*

¹⁰¹ Notice No. 8440.28, *supra* note 23, at 10(b).

¹⁰² *Id.*

¹⁰³ 47 Fed. Reg. 38,770, 38,773 (1982). Comments on pilot certification fell into the following groups:

(1) No certification; (2) required ground training in 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 an examination, and observed performance as the pilot of an ultralight; and (6) conformance to the certification requirements of Part 61 for a student and private pilot.

Id.

¹⁰⁴ *Id.*

¹⁰⁵ *Id.*

and pronounced that "[t]he ultralight community is expected to take positive action to develop these programs in a timely manner and gain FAA approval for their implementation."¹⁰⁶ The ultralight community has been threatened with further FAA regulatory action if the self-regulation fails to meet the FAA's safety objectives.¹⁰⁷

In 1976, a tort action brought against the United States charged that the failure of the FAA to determine that hang gliders were "aircraft" requiring safety rules and regulations was the proximate cause of a hang glider pilot's death.¹⁰⁸ The plaintiff alleged that the Administrator of the FAA "had a duty to determine that 'hang gliders' were aircraft within the meaning of 49 U.S.C. § 1301(5), and prescribe rules and regulations for their safety pursuant to 49 U.S.C. § 1421(a)" ¹⁰⁹ The court barred the suit, holding that the type and scope of air safety rules and regulations prescribed by the

¹⁰⁶ *Id.* at 38,770.

¹⁰⁷ *Id.*

¹⁰⁸ *Fielder v. United States*, 423 F. Supp. 77 (C.D. Cal. 1976).

¹⁰⁹ *Id.* at 78. Section 1301(5) provides:

(5) "Aircraft" means any contrivance now known or hereafter invented, used or designed for navigation of or flight in the air.

49 U.S.C. § 1301(5)(1976). Section 1421(a) provides:

(a) The Administrator is empowered and it shall be his duty to promote safety of flight of civil aircraft in air commerce by prescribing and revising from time to time:

(1) Such minimum standards governing the design, materials, workmanship, construction, and performance of aircraft, aircraft engines, and propellers as may be required in the interest of safety;

(2) Such minimum standards governing appliances as may be required in the interest of safety;

(3) Reasonable rules and regulations and minimum standards governing, in the interest of safety, (A) the inspection, servicing, and overhaul of aircraft, aircraft engines, propellers, and appliances; (B) the equipment and facilities for such inspection, servicing, and overhaul; and (C) in the discretion of the Administrator, the periods for, and the manner in which such inspection, servicing, overhaul shall be made, including provision for examinations and reports by properly qualified private persons whose examination or reports the Administrator may accept in lieu of those made by its officers and employees;

(4) Reasonable rules and regulations governing the reserve supply of aircraft, aircraft engines, propellers, appliances, and aircraft fuel and oil, required in the interest of safety, including the reserve supply of aircraft fuel and oil which shall be carried in flight;

(5) Reasonable rules and regulations governing, in the interest of safety,

FAA Administrator were "within the sole and sound discretion of the Administrator."¹¹⁰ The court further stated that the FAA's statutory definition of "aircraft"¹¹¹ defines aircraft "in a broad and general manner, thus leaving to the sole and sound discretion of the Administrator the duty of determining what devices constitute aircraft within the meaning of the Act."¹¹² An FAA advisory circular reiterates this reasoning, stating that in promulgating the current FAA regulations governing ultralights, the Administrator has exercised his discretion by deeming powered and unpowered ultralights "vehicles" and not "aircraft," even though "[t]he addition of powerplants and controllable aerodynamic surfaces [has] created vehicles which approximate the operational capabilities of fixed-wing aircraft."¹¹³

C. *Ultralight Operating Rules*

The rules governing ultralight vehicle operation were promulgated 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."¹¹⁴ Additionally, the rules were promulgated to "give the FAA a regulatory basis for enforcement action, if necessary."¹¹⁵ The ultralight flight operation regulations which the FAA promulgated are consistent with the agency's determination to impose minimal regulation.

Operation of an ultralight in a manner hazardous to other persons or property is forbidden.¹¹⁶ This rule, not unique to

the maximum hours or periods of service of airmen, and other employees, of air carriers; and

(6) Such reasonable rules and regulations, or minimum standards, governing other practices, methods, and procedure, as the Administrator may find necessary to provide adequately for national security and safety in air commerce.

49 U.S.C. § 1421(a) (1976).

¹¹⁰ *Fielder v. United States*, 423 F. Supp. at 82.

¹¹¹ 49 U.S.C. § 1301(5) (1976).

¹¹² *Fielder v. United States*, 423 F. Supp. at 82.

¹¹³ Advisory Circular (AC) 103-6, *supra* note 54, at 1.

¹¹⁴ *Id.*

¹¹⁵ 46 Fed. Reg. 38,472, 38,474 (1981).

¹¹⁶ 14 C.F.R. § 103.9(a) (1983).

ultralights, is universal in all aspects of aviation.¹¹⁷ No object which could be dangerous to persons or property may be dropped from ultralights.¹¹⁸ Section 103 is intended to avoid jeopardizing the safety of persons or property in the air or on the ground.¹¹⁹

Ultralights are restricted to operation between the hours of sunrise and sunset.¹²⁰ Twilight operation¹²¹ is also permissible provided the vehicle operates with anticollision lights with at least a three mile visibility and operates outside controlled airspace.¹²² The twilight operation was included after commentators pointed out that the meteorological conditions (lack of wind and turbulence) make this period particularly good for novice flyers.¹²³ Commentators further urged that collisions could be avoided as these periods afford adequate light for visibility.¹²⁴ The FAA observed ultralight operations in twilight hours and concluded that the available light was adequate, particularly when "combined with the controllability and maneuverability of these vehicles."¹²⁵ Anticollision lights¹²⁶ afford a descending aircraft pilot, as well as other ultralight operators, notice of the ultralight's presence.¹²⁷

Ultralight vehicles are required to yield the right-of-way to

¹¹⁷ 47 Fed. Reg. 38,770, 38,773 (1982).

¹¹⁸ 14 C.F.R. § 103.9(b) (1983).

¹¹⁹ 47 Fed. Reg. 38,770, 38,773 (1982).

¹²⁰ 14 C.F.R. § 103.11(a) (1983). The proposed regulations made sunrise to sunset the operation period because "(1) it [the time period from sunrise to sunset] is easily understood and can be directly observed by the operator and (2) the times of sunrise and sunset are widely reported occurrences (sic) which do not require special knowledge or published tables." 46 Fed. Reg. 38,472, 38,475.

¹²¹ 14 C.F.R. § 103.11(b) (1983). Twilight is defined in the regulation as the "30 minutes before official sunrise and 30 minutes after official sunset or, in Alaska, during the period of civil twilight as defined in the Air Almanac" *Id.*

¹²² 14 C.F.R. 103.11(b) (1983).

¹²³ 47 Fed. Reg. 38,770, 38,773 (1982).

¹²⁴ *Id.*

¹²⁵ *Id.*

¹²⁶ *Id.* For ultralight operation, anticollision lights are defined as "any flashing or stroboscopic device that is of sufficient intensity so as to be visible for at least 3 statute miles." *Id.* at 38,773 - 74. This regulatory approach allows an ultralight operator to avoid the expense of equipping his vehicle with a certificated lighting system. *Id.* at 38,774.

¹²⁷ *Id.* at 38,773.

all other aircraft under a "see and avoid" concept.¹²⁸ Powered ultralights must yield the right-of-way to any unpowered ultralight.¹²⁹ Some commentators suggested that ultralights have the right-of-way over *all* other vehicles.¹³⁰ Other commentators suggested that the requirements of section 91.67,¹³¹ which contains the air right-of-way rules, should apply, grouping unpowered ultralights with gliders and powered ultralights with airplanes.¹³² The FAA determined, however, that uncertificated sport operations do not merit right-of-way over aircraft,¹³³ and, therefore, it behooves ultralight operators to avoid areas where aircraft operations occur.¹³⁴ The FAA noted that, due to the ultralight's smaller size, an ultralight operator is more likely to spot an aircraft before the reverse occurs.¹³⁵ The FAA further argued that an aircraft's more rapid forward speed does not afford it the chance to avoid an ultralight spotted in close proximity.¹³⁶

Operation of ultralights over congested areas or over open air assemblies of people is expressly prohibited by the FAA regulations.¹³⁷ The FAA bases its position on the belief that concentrations of the public deserve protection from possible dangers connected with operations of uncertificated vehicles operated by uncertificated pilots.¹³⁸ Because aircraft carrying experimental airworthiness certificates are forbidden to fly

¹²⁸ 14 C.F.R. § 103.13(a) (1983).

¹²⁹ *Id.* at § 103.13(c) (1983).

¹³⁰ 47 Fed. Reg. 38,770, 38,774 (1983).

¹³¹ General Operating and Flight Rules, 14 C.F.R. § 91.67 (1978). Section 91.67(c) provides:

If the aircraft are of different categories—

(1) A balloon has the right of way over any other category of aircraft;

(2) A glider has the right of way over an airship, airplane or rotorcraft;
and

(3) An airship has the right of way over an airplane or rotorcraft.

Id.

¹³² 47 Fed. Reg. 38,770, 38,774 (1982). Reasons given for adopting these right-of-way rules were centered on the inability of unpowered ultralights to maneuver and change location quickly. *Id.*

¹³³ *Id.*

¹³⁴ *Id.*

¹³⁵ *Id.*

¹³⁶ *Id.*

¹³⁷ 14 C.F.R. § 103.15 (1983).

¹³⁸ 47 Fed. Reg. 38,770, 38,774 (1983).

over congested areas¹³⁹ in order to assure the safety of persons and property below, the FAA determined that the same standard should apply to ultralights.¹⁴⁰ Commentators favored the prohibition, as they believed "uncertificated aviation activities have no place over congested areas."¹⁴¹ The FAA has also warned that restrictive state and local regulations could result from the public annoyance caused by powered ultralights.¹⁴² Even when ultralights comply with the prohibition of flight directly over congested areas, the noise from the vehicles may carry to a nearby congested area.¹⁴³

Without prior authorization from the local air traffic controller, ultralights are prohibited from operating within "an airport traffic area, control zone, terminal control area, or positive control area"¹⁴⁴ Aircraft pilots commented that ultralight operation is completely incompatible with aircraft operations in these areas,¹⁴⁵ but the FAA chose to ignore them.¹⁴⁶ Conceding that it shared the concern over intermixing the slower ultralights with faster aircraft, the FAA

¹³⁹ 46 Fed. Reg. 38,472, 38,476 (1983). The commentary to the proposed regulation states, "Like ultralight vehicles, [aircraft having experimental airworthiness certificate] designs are unproven. Aircraft of that nature vary from highly complex, newly designed aircraft to proven designs that have received various degrees of modification." *Id.*

¹⁴⁰ *Id.* The FAA clarified its definition of "congested area" by noting that "operation of an ultralight vehicle (which does not otherwise create a hazard) within the confines of open areas within a congested area, such as an unoccupied, open field, would not generally be considered an operation over a 'congested area.'" *Id.* To further clarify its position on the prohibition of operation over "an open air assembly of persons" the FAA stated that "persons directly associated with the ultralight operations (such as ground crews, and operators and crew members of other vehicles), would not be considered an assemblage of persons" *Id.*

¹⁴¹ 47 Fed. Reg. 38,770, 38,774 (1982).

¹⁴² Advisory Circular (AC) 103-6, *supra* note 54, at 40.

¹⁴³ *Id.* at 5. The FAA cautioned ultralight operators that the slower speed of the vehicles creates longer exposure to noise, and the lower altitude operation increases the intensity of the noise. *Id.*

¹⁴⁴ 14 C.F.R. § 103.17 (1983).

¹⁴⁵ 47 Fed. Reg. 38,770, 38,774 (1982). Due to the weight of ultralights, they are particularly susceptible to the effects of wake turbulence, and for that reason operation "in close proximity to aircraft of greater speed and weight should be avoided." Advisory Circular (AC) 103-6, *supra* note 54, at 9. Some commentators even suggested a maximum operating altitude of 3,000 feet AGL for all ultralights. 47 Fed. Reg. 38,770, 38,774 (1982).

¹⁴⁶ 47 Fed. Reg. 38,770, 38,774 (1982).

deemed that the real danger comes from ultralight operation unknown to the controller or aircraft pilot and not from performance characteristics.¹⁴⁷ The FAA concluded that preauthorization to enter the airspace areas is sufficient to insure safe operation.¹⁴⁸

As ultralight operators "are not required to demonstrate aeronautical knowledge or experience requirements,"¹⁴⁹ one cannot help but question the presumption that ultralight operators will know when they *are* operating in controlled areas. The FAA has published an advisory circular on ultralight operation¹⁵⁰ which attempts to give an ultralight operator a crash course in airspace areas, securing air traffic authorization, traffic patterns and operations in the vicinity of airports, and use of two-way radios.¹⁵¹ Uncertificated sport and recreational ultralight operators may find these instructions too technical to comprehend without actual aeronautic training, assuming they even take the time to try to acquaint themselves with airport traffic areas and control zones.

The FAA's ban on ultralight operations in prohibited or restricted areas without prior permission¹⁵² poses the same problem. A presumption of an ultralight operator's knowledge of areas prohibited due to "military and presidential security, flight training and testing, experimental weapons testing, and the launch and recovery of rocket-powered vehicles,"¹⁵³ presupposes a great deal. The presumption is that ultralight operators possess aeronautical savvy and expertise which these uncertificated pilots are not statutorily required to possess. Still, the FAA determined that unauthorized flight in established areas "derogate[s] the purpose for which

¹⁴⁷ *Id.*

¹⁴⁸ *Id.*

¹⁴⁹ Advisory Circular (AC) 103-6, *supra* note 54, at 7.

¹⁵⁰ *Id.*

¹⁵¹ *Id.* at 7-14.

¹⁵² 14 C.F.R. § 103.19 (1983).

¹⁵³ 47 Fed. Reg. 38,770, 38,775 (1982). Many commentators recognized the need to gain prior permission to enter these restricted areas. However, some commentators felt that ultralight operators should be allowed to operate at their own risk without these restrictions. *Id.*

these areas were restricted,"¹⁵⁴ and that avoidance of the areas by ultralight operators does not impose too heavy a burden on ultralight operations.¹⁵⁵

Since ultralight vehicles are equipped with relatively little, if any, instrumentation, the FAA ruled that visual reference to the surface is necessary at all times.¹⁵⁶ Visual reference to the surface precludes the operation "on top" of any cloud layer or obscuring weather phenomena¹⁵⁷ and ensures the operator a safe descent at any time.¹⁵⁸ Without visual reference to the surface, an operator caught "on top" must descend unannounced through the clouds, risking his own life as well as the "lives of persons who rely on the safeguards inherent in certificated aviation."¹⁵⁹ Flying "on top" or between layers of clouds can also present visual illusions which can spatially disorient an airman.¹⁶⁰ It takes a well-trained certified pilot flying with instrumentation to avoid losing control of an aircraft in such a situation, which is another compelling reason for requiring visual reference to the surface.¹⁶¹

Because "an important operational safety consideration for the operators of ultralight vehicles, as well as other vehicles, is to see and avoid other aircraft, obstructions, and airborne objects,"¹⁶² flight visibility and cloud clearance requirements were included in the ultralight regulations.¹⁶³ Since ultralights share the same airspace as fixed-winged aircraft, the basic minima for visual flight reference (VFR) operation of fixed-wing aircraft were incorporated in the ultralight regulations.¹⁶⁴ To identify the appropriate visibility and cloud

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

¹⁵⁶ 14 C.F.R. § 103.21 (1983).

¹⁵⁷ 47 Fed. Reg. 38,770, 38,775 (1982).

¹⁵⁸ *Id.*

¹⁵⁹ *Id.* A few commentators urged the FAA to require visual reference to the surface only while climbing or descending, but the FAA determined that maintenance of "visual reference with the surface is necessary to reduce the potential for collisions"

¹⁶⁰ *Id.*

¹⁶¹ *Id.*

¹⁶² 46 Fed. Reg. 38,472, 38,476 (1981).

¹⁶³ 14 C.F.R. § 103.13 (1983).

¹⁶⁴ 47 Fed. Reg. 38,770, 38,775 (1982).

clearance requirements, a table format was utilized in the regulation.¹⁶⁵ As with other sections of the ultralight regulation previously discussed, this section requires the ultralight operator to identify controlled and uncontrolled airspace.¹⁶⁶

III. FAA RELIES ON ULTRALIGHT COMMUNITY'S SELF-REGULATION

In a 1983 advisory circular the FAA stated:

On October 4, 1982, Part 103 of the Federal Aviation Regulations became effective. This regulation is unique in that it is an experiment in regulatory reform based on self-regulation. It permits the operation of "ultralight vehicles" in the nation's airspace without the support of Federal regulatory programs such as pilot certification, aircraft certification, aircraft registration, etc. . . . The FAA will focus its role in ultralight operations on enforcing the regulations of Part 103. It does not intend to conduct regular, planned surveillance of ultralight activities or otherwise devote a significant amount of

¹⁶⁵ 14 C.F.R. § 103.23 (1983). The following table is used in this way:

<u>Flight altitudes</u>	<u>Minimum flight visibility</u>	<u>Min. distance from Clouds</u>
1,200 feet or less above the surface regardless of MSL altitude:		
(1) Within controlled airspace.....	3	500 feet below, 1,000 feet above, 2,000 feet horizontal.
(2) Outside controlled airspace	1	Clear of clouds.
More than 1,200 feet above the surface but less than 10,000 feet MSL:		
(1) Within controlled airspace.....	3	500 feet below, 1,000 feet above, 2,000 feet horizontal.
(2) Outside controlled airspace	1	500 feet below, 1,000 feet above, 2,000 feet horizontal.
More than 1,200 feet above the surface and at or above 10,000 feet MSL.	5	1,000 feet below, 1,000 feet above, 1 statute mile horizontal.

Id.

¹⁶⁶ *Id.*

manpower to this sport. It does plan to rely heavily on the ultralight community to "self-regulate" its activities to ensure a continuation of the policies which led to the establishment of Part 103.¹⁶⁷

The FAA's "minimal" and "limited" regulatory approach to ultralight vehicles is aimed at imposing the least burden on the ultralight operator.¹⁶⁸ The FAA prefers that the ultralight community assume responsibility for implementation of safety programs regarding pilot certification, vehicle certification, and vehicle registration.¹⁶⁹ Should the ultralight community fail in a timely manner to implement safety programs which gain FAA approval, the FAA will take further regulatory action.¹⁷⁰ The safety of ultralight vehicles will be foremost in the FAA's determination regarding whether further regulation is required.¹⁷¹

The FAA published an advisory circular in January, 1983, on ultralight safety programs which gives the industry guidelines on pilot competency programs, vehicle airworthiness programs, and registration programs.¹⁷² Individuals or groups desiring FAA approval for implementation of a safety program must comply with guidelines in the circular.¹⁷³ To be considered for FAA approval, a proposed program must include all three areas of pilot competency, vehicle airworthiness, and vehicle registration.¹⁷⁴

The FAA urges an ultralight pilot knowledge and competency test to insure the safety of participants and other airspace users.¹⁷⁵ Pilot certification programs should include examinations to test pilot knowledge and performance tests

¹⁶⁷ Federal Aviation Administration, U.S. Dept. of Transportation, *Industry Ultralight Safety Programs*, Advisory Circular (AC) 103-1 at 1(1983) [hereinafter cited as Advisory Circular (AC) 103-1].

¹⁶⁸ 46 Fed. Reg. 38,472, 38,472 (1981).

¹⁶⁹ 47 Fed. Reg. 38,770, 38,770 (1982).

¹⁷⁰ *Id.*

¹⁷¹ Advisory Circular (AC) 103-XX, *supra* note 51 at 3(c).

¹⁷² Advisory Circular (AC) 103-1, *supra* note 167.

¹⁷³ *Id.* at 1.

¹⁷⁴ *Id.*

¹⁷⁵ *Id.* at 2.

to assure pilot skill.¹⁷⁶ The FAA considers these important portions of the pilot competency plan, addressing how the test will be accomplished on a national basis and who will be authorized to administer examinations.¹⁷⁷

The FAA recognizes the need for design and production criteria for ultralight vehicles to reduce the danger to ultralight operators, other users of the airspace, and persons on the ground.¹⁷⁸ Groups are encouraged by the FAA to develop ultralight design standards and production quality control of complete vehicles and ready-to-assemble kits.¹⁷⁹ The

¹⁷⁶ *Id.* at 2-3. The FAA suggests that the following subject areas be considered in an ultralight pilot competency program:

- (a) determination of Part 103 applicability;
- (b) inspection requirements;
- (c) hazardous operations;
- (d) daylight operations;
- (e) right of way;
- (f) congested areas;
- (g) operations in certain airspace;
- (m) (sic) visual reference to the surface;
- (n) conventional aircraft operations;
- (o) operations in prohibited or restricted areas;
- (p) flight visibility and cloud clearance requirements;
- (q) general characteristics of weather;
- (r) elements of micrometeorology and applications to ultralight flight;
- (s) common weather hazards and avoidance;
- (t) general elements of ultralight aerodynamics and performance;
- (u) general procedures for operating in the vicinity of conventional aircraft and the problems of wake turbulence;
- (v) preflight inspection of the vehicle, with emphasis on critical elements of the inspection such as proof loadings of the controls; and,
- (w) limitations and restrictions applicable to the specific vehicle being flown.

Id. at 3-4.

Besides suggesting that pilot skill be demonstrated by performing a series of prescribed maneuvers, the FAA suggests the following areas be considered in the ultralight pilot skill program:

- (a) preflight check;
- (b) ground handling;
- (c) takeoffs and landings;
- (d) traffic pattern;
- (e) flight at minimum controllable airspeed; and
- (f) emergency procedures.

Id. at 5.

¹⁷⁷ *Id.* at 2

¹⁷⁸ *Id.* at 6.

¹⁷⁹ *Id.*

FAA's Advisory Circular 103-1 states, "Any airworthiness program that would assure that complete vehicles or kits produced (sic) in conformance with those standards would result in a safe vehicle, when operated within the established design operating parameters, would be acceptable to the FAA for implementation."¹⁸⁰ Although the FAA will, on request, provide comments during the developmental state of a program, it will not participate actively in its development and implementation.¹⁸¹

The FAA recognizes a need for a "nationally organized method of registering and marking ultralight vehicles."¹⁸² These markings would enable the FAA to identify offenders by identifying vehicles and establishing vehicle ownership.¹⁸³ To gain FAA approval an ultralight community registration program must have a system for issuing and cataloging vehi-

¹⁸⁰ *Id.* The FAA suggests the following areas for consideration in the ultralight vehicle design criteria:

- (1) fatigue strength,
- (2) flutter,
- (3) wing strength,
- (4) control surfaces,
- (5) control systems; and,
- (6) powerplants.

Id. at 8.

The FAA suggests that groups consider the following areas for flight test programs:

- (1) performance,
- (2) flight characteristics,
- (3) stability,
- (4) structure,
- (5) control surface and system loads,
- (6) horizontal tail surfaces,
- (7) ailerons, wings, flaps, and special devices; and,
- (8) emergency landing conditions.

Id.

The FAA further recommends that materials used in ultralight vehicles should:

- (a) be established by experience or tests;
- (b) meet approved specifications that ensure their having the strength and other properties required by the design; and,
- (c) take into account the effects of environmental conditions, such as temperature and humidity, expected in service.

Id. at 9.

¹⁸¹ *Id.* at 7.

¹⁸² *Id.* at 10.

¹⁸³ *Id.*

cle registration numbers and markings.¹⁸⁴ Once a system of proposed procedures for registration and marking vehicles has been approved by the FAA, a block of registration numbers will be assigned to that program by the FAA.¹⁸⁵

The fledgling ultralight industry has begun some self-policing efforts.¹⁸⁶ As early as December, 1982, the Air Safety Foundation, which is linked with the Aircraft Owners and Pilots Association (AOPA), was developing a self-regulating program of requirements for ultralight operators.¹⁸⁷ The hang gliding community, in an effort to self-regulate, had a system of recognizing different levels of competency to assure the safety of participants before the ultralight regulations were enacted.¹⁸⁸ The FAA noted and commended the United States Hang Glider Association's efforts at self-regulation when that association established guidelines for industry design standards and flight testing.¹⁸⁹ It remains to be seen what criteria for aircraft and pilot certification, and aircraft

¹⁸⁴ *Id.* The FAA suggests than an ultralight vehicle registration program submitted for approval include:

- (1) a discussion of how they [the organization] will assure that their program is accomplished on a national basis and will be available to the general public without regard to membership in any ultralight organization;
- (2) the proposed policies for registration and marking of the vehicle;
- (3) the proposed procedures for making application and designating (sic) the marking requirements and numbers;
- (4) the method which will be used to maintain, for at least 36-calendar (sic) months, registration records issued by owner name, address, and registration number, including provisions for making these records available, on request to federal, state, and local authorities; and,
- (5) the proposed safety program the organization will undertake relative to the data available through their registration program.

Id.

¹⁸⁵ *Id.* at 11.

¹⁸⁶ *Around the Mall and Beyond*, SMITHSONIAN, Dec. 1982, at 23, 26.

¹⁸⁷ *Id.*

¹⁸⁸ Advisory Circular (AC) 103-1, *supra* note 167 at 2.

¹⁸⁹ 47 Fed. Reg. 38,770, 38,773 (1982). The FAA has suggested the following existing standards and procedures as guidelines for groups attempting to enact ultralight safety programs:

- (1) the Hang Glider Manufacturers Associations's "Airworthiness Requirements for Hang Gliders;"
- (2) the Basic Glider Criteria Handbook;
- (3) Advisory Circular 21-1, Production Certificates (for use in developing quality control provisions); and,

registration, groups such as the Experimental Aircraft Association (EAA) and Powered Ultralight Manufacturers Association (PUMA) will establish.

In the meantime, how can a current ultralight consumer feel confident the machine he purchases is sound? Currently, the buyer can only rely on the manufacturer's integrity in design and construction. One company, Vector Aircrafts, sells only through dealers whose contract requires them to provide nonpilot customers instruction with a certified flight instructor in a certified aircraft before flying a Vector ultralight.¹⁹⁰ Licensed pilots are required by the company's dealer contract to take a transition course from aircraft to ultralight vehicles.¹⁹¹

One commentator has stated, "[M]any machines designed by inexperienced and untrained amateurs have been sold to equally unqualified enthusiasts with results that too often have been tragic. Even the most avid supporters of ultralights admit the industry has given its opponents ample ammunition for their attacks."¹⁹² The FAA has warned that it intends to "continue to monitor the 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 operation."¹⁹³ The FAA further emphasized that individual ultralight operators must support and comply with whatever national self-regulation programs are established in order for the FAA to continue to allow industry self-regulation.¹⁹⁴

(4) Advisory Circular 21.12-1, Type Certification, Fixed-Wing Gliders (Sail planes).

Advisory Circular (AC) 103-1, *supra* note 167, at 7-8.

¹⁹⁰ Munson, *Sporting Proposition*, FLYING, May 1983, at 50, 54.

¹⁹¹ *Id.*

¹⁹² Hammitt, *Rotec's Kit Ultralights*, PRIVATE PILOT, Aug. 1983, at 24.

¹⁹³ 47 Fed. Reg. 38,770, 38,772 (1982).

¹⁹⁴ *Id.*

IV. BEYOND "SPORT" OR "RECREATION"—FUTURE USES OF ULTRALIGHTS

A vehicle as versatile as an ultralight lends itself to uses other than sport or recreation. Scientists are currently using ultralights to study migration patterns of sharks and butterflies.¹⁹⁵ Ranchers, police officers, and the United States Border Patrol are turning to ultralights as an economical alternative to more costly aircraft.¹⁹⁶ In Downey, California, ultralight vehicles are used by the police department to track fugitives or for general peace-keeping surveillance.¹⁹⁷ Many ultralights are sold for use as agricultural equipment both in the United States and overseas.¹⁹⁸

The FAA regulations indicate that exploring possible uses of ultralights beyond their original sport function diminishes their essential charm. The realities of the situation are that ultralights are being used far beyond a recreational capacity. Ultralights have caught the eye of the military, both in the United States and abroad.¹⁹⁹ The United States Air Force is experimenting with remote-controlled ultralights for military surveillance.²⁰⁰ The United States Army has purchased one single-occupant and several two-occupant ultralights for testing in surveillance, mapping, and flight training.²⁰¹ Further Army tests may entail potential use of ultralights as laser designators and light weapons carriers.²⁰²

Overseas military groups have shown enough interest in ul-

¹⁹⁵ Marden, *The Bird Men*, 164 NAT'L GEOGRAPHIC 198, 213-16 (1983).

¹⁹⁶ Marbach, *Getting High on the Light Stuff*, NEWSWEEK, July 18, 1983, at 73.

¹⁹⁷ Marden, *supra* note 195, at 213.

¹⁹⁸ Baxter, *Stepping Ultralightly*, FLYING, April 1982, at 44, 47. The article describes a company importing agricultural equipment to Venezuela from the United States and negotiating the purchase of sixty ultralights to be used as farm machinery. *Id.*

¹⁹⁹ *Id.* Rotec Engineering (Rotational Technology Engineering Company), a Texas company and one of the leading ultralight manufacturers, confirmed that overseas sales were intended for farm or military use. The president of the company added, however, "[W]e only sell military to the good guys." *Id.*

²⁰⁰ Marbach, *supra* note 196, at 73.

²⁰¹ Bulban, *Rotec Broadening Its Ultralight Market*, AV. WEEK & SPACE TECH., July 18, 1983, at 89.

²⁰² *Id.* William W. Adaska, the president of Rotec Engineering, predicts that the U.S. Army's tests could result in a sale of 1,000 ultralights to that military branch alone. *Id.* at 90.

tralights to prompt the Central Intelligence Agency to "ask a leading manufacturer not to sell to bad chaps."²⁰³ Five ultralights in desert camouflage were purchased from one manufacturer, and Saudi Arabia purchased a large number from another.²⁰⁴ These vehicles' construction of Dacron and aluminum makes them virtually invisible on a radar screen.²⁰⁵ A retired intelligence officer speculated about the potential future uses of ultralights:

Ultralights can easily be adapted for pilotless control, to send into hazardous areas with TV cameras or radiation sensors. They can be fitted with grenade launchers or submachine guns, and if you remove the pilot, they can stay aloft for 24 hours. And you are going to see smugglers flying dope across borders, piloted or by wireless control.²⁰⁶

V. CONCLUSION

One author eloquently stated, "The truth is that the potentialities of the ultralight, for both good and evil, are almost limitless. But the overriding function of the ultralight is to make possible the poetry of flight."²⁰⁷ The FAA has gone on record as not wishing to over-regulate this "poetic" sport of ultralight flying and has promulgated rules commensurate with that philosophy. The question remains whether the minimal regulations geared toward community self-policing can achieve the proper level of safety.

In a recent article on ultralights the author warned that "[d]espite the claims of some that ultralights are safer and easier to fly than conventional general aviation trainers, there is evidence that they are neither."²⁰⁸ Ultralights' "narrow performance envelopes, different control characteristics and requirements for nearly perfect weather conditions"²⁰⁹ make

²⁰³ Marden, *supra* note 195, at 216.

²⁰⁴ *Id.*

²⁰⁵ *Id.*

²⁰⁶ *Id.*

²⁰⁷ *Id.*

²⁰⁸ Munson, *supra* note 190, at 50.

²⁰⁹ *Id.*

their flight more demanding than typical light aircraft.²¹⁰ The prudent pilot flies an ultralight only in fair weather with gentle and steady winds, as ultralights are overly "sensitive to the vagaries of the wind."²¹¹

The apostles of ultralight aircraft perceive the FAA's decision to impose few restrictions on ultralights as "a superb piece of government justice."²¹² Finding the right mixture of government regulation and operational freedom that results in safe flight is the challenge, but the ultralight safety record is poor. In 1981, of 12,000 to 15,000 ultralights flying, there were forty-eight reported fatalities.²¹³ More than twenty ultralight fliers were killed in 1982.²¹⁴ A 1983 preliminary report of the National Transportation Safety Board on ultralight aircraft accidents lists twenty-five fatalities and twenty-one serious injuries.²¹⁵ As the FAA has stated that the

²¹⁰ *Id.*

²¹¹ Markowski, *supra* note 1, at 62, 68. The author explained:

The necessity is reflected in the fact that licensed pilots, who make up about half of the people flying ultralight aircraft, often have more trouble than nonpilots in adapting to the conditions. Being accustomed to heavier aircraft, they seem not to respect the wind as much as they should and are often taken by surprise when an ultralight airplane displays its extreme sensitivity to gusts.

Id. at 68.

²¹² Heiman, *supra* note 4, at 74.

²¹³ Marden, *supra* note 195, at 210. The author stated, "In that same year there were about 1,251 fatalities among the 213,267 private aircraft. That makes the two accident rates amazingly close." *Id.* Lyle Bryum, president of Eipper Aircraft which manufactures the Quicksilver ultralight, stated:

The 7,000 ultralights we have manufactured since 1977 have totaled more than one million flying hours. There have been ten fatalities, one for every 100,000 flying hours, half that of general aviation's. I will state flatly that the properly maintained ultralight aircraft is rapidly becoming the safest flying machine aloft.

Id.

²¹⁴ Marbach, *supra* note 196, at 74.

²¹⁵ NATIONAL TRANSPORTATION SAFETY BOARD, PRELIMINARY INFORMATION, AIRCRAFT ACCIDENTS INVOLVING ULTRALIGHT VEHICLES (1983). The FAA's advisory circular states that the National Transportation Safety Board's role is as follows:

The NTSB has decided to investigate all fatal powered ultralight vehicle accidents and other selected ultralight accidents and incidents which may involve significant safety issues. The Safety Board will also investigate ultralight vehicle accidents impinging on civil aircraft operations or on persons and property on the ground. The Safety Board will review accident data and the safety efforts of the aviation community in order

"safety record of ultralight vehicles will be the foremost factor in determining the need for further regulations,"²¹⁶ these figures merit the agency's attention.

The FAA has been firm in its policy determination to treat ultralight operators as assuming the risk for their "sporting activity."²¹⁷ The fact is, however, that "the demands of air-manship are high enough, and the penalties for ignorance serious enough"²¹⁸ to warrant further guidance and regulation of ultralights by the agency. As one writer stated, "[T]he ultralight movement has quickly grown to a state of acute adolescence. Whether or not it survives to adulthood depends on its ability to distinguish dreams from fantasy in the crucial areas of safety and economics."²¹⁹ The FAA has a part to play in the ultralight movement's potential growth. Considering the number of fatal accidents and near-misses, this author believes that the FAA's current ultralight regulations fall woefully short of insuring an environment safe enough for the fledgling industry's growth.

to keep abreast of any emerging safety problems and will be available to provide technical assistance in remedying those problems.

Advisory Circular No. 103-6, *supra* note 54 at 19 (1983).

²¹⁶ Advisory Circular (AC) 103-XX, *supra* note 51, at 2.

²¹⁷ 47 Fed. Reg. 38,770, 38,772 (1982).

²¹⁸ Munson, *supra* note 190, at 50.

²¹⁹ *Id.*

Casenotes and Statute Notes

