

1947

Helicopters and the Changes They Require in Aviation Law

L. Welch Pogue

Follow this and additional works at: <https://scholar.smu.edu/jalc>

Recommended Citation

L. Welch Pogue, *Helicopters and the Changes They Require in Aviation Law*, 14 J. Air L. & Com. 300 (1947)
<https://scholar.smu.edu/jalc/vol14/iss3/3>

This Article is brought to you for free and open access by the Law Journals at SMU Scholar. It has been accepted for inclusion in Journal of Air Law and Commerce by an authorized administrator of SMU Scholar. For more information, please visit <http://digitalrepository.smu.edu>.

HELICOPTERS AND THE CHANGES THEY REQUIRE IN AVIATION LAW

By L. WELCH POGUE

Member of law firm of Pogue & Neal, Washington, D.C.; University of Nebraska, A.B.; University of Michigan, LL.B.; Harvard University, S.J.D.; Chairman of Board, National Aeronautics Association; member, Industry Panel of the Air Coordinating Committee; and member of Committee on Aeronautical Law of American Bar Association. *Formerly*, Chairman of the Civil Aeronautics Board, 1942-46; General Counsel, 1939-41. Author of numerous articles on aviation.

AS the title of this talk indicates, the helicopter requires numerous changes in aviation law. By "aviation law", I mean, for the most part, statute law—Federal, state, and municipal—including rules and regulations made pursuant thereto by administrative agencies. A large body of aviation law has been developed over the past 30 years. It has been enacted for the purpose of regulating the conventional fixed-wing type of aircraft. Now comes the helicopter which finds, at the very beginning of its development, that it is subject to all of this body of aviation law although such law was designed for a different vehicle.

Before it can be understood why changes are required in aviation law to fit the helicopter, it is essential to understand how the helicopter operates in contrast to the ordinary airplane we have come to know, and to have an appreciation of its potential usefulness to the public, and of the extent to which it may become a transportation vehicle widely-owned by the average man. Accordingly, I shall proceed by first describing some of the more significant and distinguishing characteristics of the helicopter and its place in our economy and will refer to some of the changes in aviation law which the helicopter would seem to require in order to permit it to perform its natural functions.

When the age-old desire to shake off the earth and fly entered the Twentieth Century with perennial hope, it found success—but success with limitations. Flight in the fixed-wing type airplane, requiring lateral movement for support in the air, brought speed; and is bringing in a new epoch in military, political, economic, and social concepts. But during the first half of the century it had not yet reached the common man extensively in his private uses. Now the helicopter comes along at a comparatively late date with only moderate speeds of from 80 to 100 miles per hour, but with a utility, with operational and safety characteristics, and with mass production possibilities which give it the promise of the fulfillment of that age-old desire to fly which the millions of individual world citizens have had. This is for them. It is for them soon.

In the light of the very considerable advance in the art of flight and the science of aeronautics, it is surprising that the helicopter with its wide range of useful possibilities was not developed earlier. Of course, many attempts to do so are recorded in the history of aviation. It is well known that the famous Leonardo de Vinci pioneered the art of flight on paper. It is interesting to note that one of his designs shows a machine consisting of a lifting screw driven about a vertical axis—a helicopter.¹ But the practical helicopter has only recently been created. When you hear anyone raising questions about the helicopter on the ground that it is complicated or costly, just bear in mind that we should give it a little time before judging it under standards calling for the perfect vehicle—as we had to give time for the perfection of nearly every other valuable discovery before it could be expected to achieve its maximum usefulness and acceptance.

In order to understand the helicopter and its future utility, to recognize that it is *sui generis*, that is, in a class by itself and not an airplane at all in the usual sense, and to appreciate the need for freeing the helicopter from certain laws, rules, and regulations intended for a quite different type of vehicle (that is, the fixed-wing airplane), it is essential to have in mind some of the facts about helicopter performance. What then are the distinguishing operational characteristics of the helicopter which set it apart from all other kinds of aircraft and render unnecessary its conformity with many existing aviation laws, rules, and regulations?

These distinguishing operational characteristics are almost as striking as the art of flight itself was originally. The moving wing, that is, the power-driven rotor, has for the first time given flight a hummingbird omni-directional agility. I shall mention here the most outstanding only of the special facts concerning helicopter operation which, I believe will show a compelling need for certain changes in aviation law.

1. *Vertical Ascent and Descent.* The moving power-driven wing, or the rotor as it is called, is the remarkable achievement which has freed the helicopter from the limitation, applicable to all fixed-wing type airplanes, which requires that they must maintain a minimum forward speed (that is, in excess of the "stall speed") in order to stay in the air. The helicopter can ascend and descend vertically or at any desired angle. It is more economical to ascend and descend at an angle although it is not in any sense required that the angle be comparable to that required for fixed-wing types.

2. *Hovering.* The helicopter can hover in mid-air for an indefinite period. This again is made possible by the power-driven rotor. Never before has any aircraft been able to stay in the air without forward speed.

3. *Speed May be Anything from Zero to Maximum.* The helicopter shares with the automobile the ability to travel at any speed from zero miles per hour to its maximum rate. It has no critical "stall speed" in the usual sense and can, therefore, slow down at will.

¹ See *American Helicopter*, Volume V, No. III, p. 13, February 1947.

4. *Quick Stopping in Mid-Air.* The helicopter can stop from a forward cruising speed in a very short distance. From a forward speed of approximately 70 or 80 miles per hour at sea level, types now in commercial use can, under emergency conditions, arrest their speed and acquire a hovering stationary position in less forward advance from the time the emergency stop is undertaken than would be required by an automobile operating at similar speeds.

5. *Adjustment to Traffic Conditions.* The helicopter can fly sideways, backwards or in any direction at adjustable speeds. This characteristic coupled with its ability to hover, to ascend or descend either vertically or at any angle, and to stop quickly, places in the hands of the helicopter pilot an ability to meet traffic conditions which probably exceeds that of an operator of any other known vehicle, including the automobile. As an automobile driver must slow down because of traffic conditions, or fog, or the conditions of the highway, so a helicopter pilot can adjust his speed or attain a hovering position in order to meet traffic or weather conditions or surface problems.

6. *Parking-Lot Landings.* The helicopter can operate in and out of a space of very limited area. If necessary it can land in an area only a few times the diameter of its rotor, with or without power.

7. *Landing in Event of Power Failure.* In the event of power failure, the rotor automatically disengages from the engine and, pursuant to the principle called autorotation, continues to rotate in such a manner as to permit the helicopter to make a safe landing in a few feet of area. This is a complete revolution in the art of flight. Open lots and spaces, suitable for emergency helicopter power-off landings, can be found scattered throughout almost every town and city. Furthermore, the danger to persons and property on the ground is much less than in the case of fixed-wing crash landings. The damage resulting from such landings is, roughly speaking, "proportional to the kinetic energy." The kinetic energy in turn varies directly as the square of the speed. A fixed-wing aircraft in trouble comes in for a crash landing at high forward speeds with large kinetic energy; whereas, a helicopter will come almost straight down at a comparatively slow speed with a relatively small amount of kinetic energy.

8. *Freedom from Runways and Conventional Traffic Patterns.* The helicopter needs no runways, should never use them, should avoid entry into conventional air traffic patterns (should be permitted to fly under them in certain cases), and should, so far as possible, stay below or outside the line of flight of conventional aircraft.

9. *Noise.* Unlike propellers, motors do not produce an offending noise. If the engines are effectively muffled (as they must be), the helicopter can pass through the air with the greatest of ease without offending the nervous or agitating the fearful.

Thus we see that the helicopter is not an airplane in the conventional sense. Generally speaking, its operational characteristics distinguish it completely from all other vehicles, including airplanes, and establish it as a new and distinct type of vehicle.

One of the early uses of the helicopter will be to carry the mail between suburban areas and between them and central forwarding points in metropolitan communities. The Post Office Department has been a pioneer in this field as it was in the case of the airplane in the early days.² The Post Office conducted experimental tests for the carriage of mail by helicopters in Los Angeles, Chicago and New York. Los Angeles is the first of these areas where regular mail service by helicopter has been authorized by a Civil Aeronautics Board certificate.³ Under the law no one can carry mail by air without a certificate of public convenience and necessity issued by the CAB after a public hearing.⁴

The possibilities for time savings in mail deliveries are very great. W. H. Ackerman, postal inspector, has traced two air mail letters across the country, one using helicopter service at both ends, and the other going by the present method. He finds the elapsed time between mailing and delivery to be 18½ hours where the helicopter is used; and 37 hours where it is not. This is merely illustrative of what can be done.

Next, extensive uses for helicopters in commercial operations will, in all probability, develop before there is a widespread private ownership of these vehicles. I will list a few of the uses in which interest has already developed. Rescue work, particularly at sea and in inaccessible places; crop dusting, including orchard spraying and dusting; suburban delivery; pipe line inspection⁵; mineral survey; hauling chicle out of the jungle in Central America; exploration of natural resources in undeveloped areas; forest fire patrol; timber appraisal; aerial photography; traffic control; coast patrol; ship-to-shore operations; lighthouse supply; air express delivery; cattle supervision and animal census; wire laying; and so on.

One category of use deserving special mention is too broad to be developed here. It relates to the military application of this marvelous invention. You can see at a glance that in military rescue work, emergency delivery work, artillery spotting, reconnaissance, and the like, the helicopter offers many possibilities to the military services.

Beyond the experimental uses for mail and specialized commercial uses will come taxi, commuting, and regular local common carrier service. And somewhere along the line the average man will claim the helicopter as his own, somewhat as he claimed the automobile. It is only a question of when—not if. And when that time arrives, helicopters will be counted in very large numbers.

In view of this predicted future wide use, one naturally asks about the subject of nuisance legislation. Nuisance and safety regulation

² See, "An Air Minded Government's Contribution to Civil Aviation," by L. Welch Pogue, before the Fourth Annual Meeting of the Southwest Aviation Conference, Wichita, Kansas, April 25, 1941; reprinted in *The Technology Review*, November 1941.

³ *Los Angeles Helicopter Case*, 8 C.A.B.—(Docket 896, et al., order E584-6, May 20, 1947).

⁴ *Civil Aeronautics Act of 1938*, as amended, section 401.

⁵ In one case a helicopter did in one hour what normally would have required 15 men 5 hours to do, or a total of 75 man hours.

should not be confused. All sorts of weird results and impossible tangles in jurisdiction can and will follow if nuisance regulation masquerades under the name of safety.

Nuisance regulation, whether in the form of statutes, regulations, or ordinances, made under the police power of the states may, but I believe need not, develop into anything of importance in the regulation of helicopters. Intelligent, aggressive self-policing by this new helicopter industry can avoid a mass of nuisance regulation which, if enacted, could smother the use and development of this very promising vehicle for many years. One of the problems is engine noise. As I have indicated, the rotor is not a noise problem as is the propeller in the conventional-type airplane. The engine exhaust can be, and I believe is being, successfully muffled. Other possible nuisance problems can be eliminated by conservative flying, respect for the sensibilities of others both on the ground and in the air, and careful preparation and selection of landing areas so as to avoid unnecessary dust and rotor air wash. Fortunately, good progress is being made in the direction of effective self-policing. Manufacturers are alert to the problem and are not only insisting on thorough careful training of pilots but are prepared to cooperate in a program of indoctrination of both operators and pilots to the end that each operator and pilot should realize that he is representing an important new industry when he operates his helicopter and that he should conduct himself at all times and under all circumstances in such a manner as to avoid endangering its future promising growth and development. In summary, nuisance legislation need not develop if proper action is taken by those having control of the causes of this problem.

One of the places where change is required is in those provisions of aviation law relating to airports, their establishment and operation. If helicopters do not use landing runways and if they stay out of the traffic patterns of conventional fixed-wing types (as they should do), where are they to land? They should be permitted the maximum freedom consistent with safety in the establishment of helicopter landing areas. Obviously the helicopter should be permitted to land and take-off freely in the country and in the thinly settled districts. If an owner of property wants to permit his helicopter-driving friend to visit him, there should be no law against it, if the operation conforms to all safety rules, any more than there is against your neighbor visiting you by automobile. Of course, I am assuming that the engines will be muffled, as are automobile engines, with comparable results. The same freedom should exist with respect to the individual helicopter owner who desires to base his vehicle at home.

But what about a helicopter landing and take-off area used for regularly scheduled operations or by the miscellaneous public? Several types of landing areas for these purposes will probably be established if sufficient latitude is accorded by government authorities. Among these types will be:

1. Privately owned and serviced landing areas open to one or more of the following:

- (a) helicopter common carriers of mail, persons, or property;
 - (b) the public generally;
 - (c) individual helicopter owners who have contracted for the landing privilege;
2. Governmentally owned, and either publicly or privately serviced, landing areas open to the public;
 3. Governmentally owned areas open to use by a helicopter service operated for the Government, such as a helicopter service for the Post Office Department landing in the government-owned lot near Post Office buildings or on Post Office rooftops.

Petroleum companies should be very much interested in helicopter landing areas because of the fueling and servicing possibilities. This offers promise of having these facilities operated on a strictly business basis with all of the accompanying benefits resulting from competition. This one possibility might well lead toward placing a minimum amount of emphasis on the need for the municipality to provide them.

It is, of course, clear that zoning laws might prevent the development in a zoned area of a busy helicopter mart (like a garage), servicing and storing helicopters. This type of zoning ordinance is a well known device to preserve the character of the neighborhood. But beyond this point, it is submitted that the best interest of communities (large and small) do not require licensing by any governmental agency, Federal, state, or municipal, but only that all rules for safe operation be observed scrupulously at all times. If this is to be the result, it is obvious that numerous existing Federal regulations, and state and municipal laws and ordinances should be adjusted to permit the free establishment of such helicopter landing areas.

This brings us to the major field of laws, ordinances, rules, and regulations relating to safety where certain changes in aviation law are essential. Take, for example, the requirement that an aircraft cannot fly contact unless it has at least one-mile visibility. This is required for fixed-wing high speed aircraft in order to avoid the hazard of collision. With the helicopter which can slow down to any desired rate of speed or, if necessary, "stand still" in the air, that is, hover, it is clear that there is a strong case for permitting helicopters to fly at less than one-mile visibility. This, of course, assumes that the helicopters in so travelling are required to be outside of airport control zones and in a layer of air constituting the first 700 feet above the ground which is not occupied by fixed-wing aircraft operating on instruments.

Another provision requiring a change is the one providing that except when necessary for landing or taking-off aircraft shall be flown over congested areas of cities, towns or settlements at altitudes sufficient to permit emergency landing outside such areas and in no case less than 1,000 feet above such areas. A proposed amendment to this provision currently under favorable consideration would require this altitude to be 1,000 feet above the highest obstacle within a radius of 2,000 feet from the aircraft. This 1,000-foot altitude rule is required for fixed-wing aircraft in order to avoid the hazard of collision with

structures on the ground or of having insufficient altitude in the event of power failure to glide to a place where an emergency landing can be made without undue hazard to persons and property in the congested area. With the ability of the helicopter to land in very small areas, to hover, to proceed at a reduced speed, to stop quickly in mid-air and thus to adjust itself to any traffic or other conditions, and with the desirability of helicopters staying below the flight path of fixed-wing aircraft, it seems clear that so far as safety is concerned, a change in aviation law is indicated here so as to eliminate this requirement which is unnecessary insofar as helicopters are concerned.

In the field of safety regulation it is probable that we must evolve new techniques in the daily operation of our Federal-state-municipal system. Since 1789 our experiment in making the Federal-state relationship work has called for adjustments here and there to meet new factual conditions—all, however, in harmony with the farsighted, fundamentally sound concept of this dual form of government. Thanks to the rapid discovery and growth of new forms of communication and transportation, the basic problem of making the Federal-state relationship work would probably be easier today (if it were to be tried for the first time now) than it was originally. But we still have adaptations to work out; and the regulation of the helicopter is one of them.

Briefly stated, the intelligent regulation of the helicopter calls for a new, high level of cooperation in rule-making between the Federal, state, and municipal authorities—all three.

Admittedly some safety regulations applicable to helicopters will be required. As a long-range matter, who should make them? Clearly, the Federal Government, in the interest of the safety of interstate air commerce, will continue to regulate helicopter flights in the designated airways and otherwise as necessary. This is because theoretically anyone in the air is potentially a hazard to interstate flight. He actually becomes such in case he is in interstate flight or does not stay clear of interstate flights or gets lost or is careless. It has been held that under existing law the Federal Government has power to provide that no person shall pilot a civil aircraft in the United States without valid Federal pilot and airworthiness certificates.⁶

It is well recognized that in a field where the Federal Government has the proper constitutional authority and the proper enabling Federal legislation, its duly promulgated regulations are controlling and take precedence over inconsistent state and local laws and regulations. It is, of course, entirely possible to have valid state and local safety laws and regulations which are not inconsistent with the Federal regulations. These state and local laws and regulations are based upon the so-called police power of the states. Because of the fact that the helicopter is a slow-flying, low-flying, essentially short-range vehicle, it may well be held that it falls within the police power referred to. Let us suppose that is the case and that we have many differing state laws and many more

⁶ *United States v. Drumm*, 50 F. Supp. 451 (D.C. Nev. 1944).

differing municipal ordinances which, while not inconsistent with the Federal regulations, have to be observed by all helicopter operators.

In such a state of affairs, the first problem is to face the fact that when a multitude of local regulations are made by many different people, none of whom are experienced in helicopter operation or familiar with its operating characteristics, the results are certainly going to be little less than chaotic. In the second place, a much more serious concern will be that a helicopter pilot contemplating a trip across the country on which he will be visiting several states and many municipalities, will have the almost impossible task of reading all the varying state and municipal laws, rules and regulations before he starts his trip; but he can't read them without first obtaining them. Does he write to each separate state and each separate municipality and wait for a reply? When does he know that he has the most recent amendments or ordinances and laws? Or is he obliged to subscribe to some very expensive loose-leaf service and read in as many different places as he intends to visit the separate rules and regulations applicable in that particular area? In any event, if each of these jurisdictions is to make its own independent regulations, the helicopter pilot must remember which ordinance, law or regulation applies to each particular town when he arrives there. The impossibility of keeping a mass of differing information clearly in mind is obvious. With the best of intentions, it would take something more than a Philadelphia lawyer to master such an assignment. Without further illustration, it can be seen that chaos will develop unless some means can be devised to provide the helicopter pilot with the means of learning his rules and regulations from one source, in the most simplified manner and with a minimum of duplication.

Theoretically, it would seem that country-wide helicopter rules designed primarily for the protection of interstate commerce flights of all types of aircraft, supplemented by any necessary state and local rules designed to meet special local conditions, should all be made around a common council table with Federal, state, and local authorities, all represented and under arrangements which would make available at one source all of the regulations needed. Although our constitutional governmental organization may not entirely meet this theoretical need, it is believed that substantially the same results can be obtained through cooperation between the Federal Government and the states and municipalities.⁷ This, however, not only requires cooperation between the Federal Government on the one hand and the states and municipalities on the other, but it also requires cooperation between the states and the municipalities.

⁷ In this connection, Section 205(b) of the Civil Aeronautics Act of 1938 provides: "The Authority is empowered to confer with or to hold joint hearings with any State aeronautical agency, or other State agency, in connection with any matter arising under this Act, and to avail itself of the cooperation, services, records, and facilities of such State agencies as fully as may be practicable in the administration and enforcement of this Act." The word "Authority" includes both the Civil Aeronautics Board and the Administrator of Civil Aeronautics.

Take, for example, the development of a standard helicopter traffic pattern for operations within municipalities. The laws, ordinances, rules, and regulations establishing them and providing for their enforcement would be extremely complex if completely different traffic patterns and theories of traffic distribution were adopted for different municipalities. As much uniformity as possible becomes essential here if a helicopter pilot travelling from one city to another is to stay out of the traffic jail. Shall the helicopter traffic go in a clockwise or counter-clockwise direction around some central marker in the municipality? Shall the cardinal directions of the compass be used as major helicopter traffic one-way streets? Shall the municipality be zoned so that out-of-town helicopter traffic coming to or departing from the center of the city should come in or go out at a higher altitude than that destined to or coming from a more outlying zone? A new level for Federal-state-municipal cooperation is required to develop satisfactorily the laws, ordinances, rules, and regulations which will control this important problem.

Numerous changes are required in aviation law for the helicopter. The Federal Government, states, communities, and the people would be acting in their own self-interest if they would subscribe to the following program:

1. Regard the helicopter as a distinct type of vehicle and let it be subject to Federal safety regulations only to the extent and in the manner required by its operating characteristics.
2. In order to permit the helicopter to serve to the full extent of its usefulness, be prepared to modify state and municipal laws, ordinances, rules and regulations as necessary to permit the helicopter the freedom which its safe operating characteristics will permit.
3. Avoid the enactment of nuisance laws under the mask of safety.
4. Permit helicopter landing areas to be established freely under our competitive system, subject to full observance of all safety laws and, in the case of landing areas open to the public or regularly scheduled operations, to zoning restrictions enacted for the purpose of preserving the character of the neighborhood; and modify existing laws as necessary to permit the foregoing to be done.
5. Develop a new, high level of cooperation between Federal-state-municipal regulatory authorities in working out safety regulations so that:
 - a. the views of all can be developed in a public record;
 - b. uniform regulatory measures can be achieved;
 - c. the regulations a pilot needs to know can be reduced to a simplified minimum obtainable all in one place.