

# **FEDERAL AVIATION REGULATIONS**

## **Part 77 Objections Affecting Navigable Airspace**

This edition replaces the existing loose-leaf  
Part 77 and its changes.

This FAA publication of the basic Part 77, effective May 1, 1965,  
incorporates Amendments 77-1 through 77-11 with preambles.

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## **Introductory Note**

Part 77 is codified under Subchapter C, Aircraft, of Title 14 of the Code of Federal Regulations.

This FAA publication of the basic Part 77, effective May 1, 1965, incorporates Amendments 73-1 through 73-11.

Bold brackets [  **]** throughout the regulation indicate the most recent changed or added material for that particular subpart. The amendment number and effective date of new material appear in bold brackets at the end of each affected section.

## **NOTICE TO FAA AND OTHER GOVERNMENT USERS**

Distribution of changes to this part within the Federal Aviation Administration and other U.S. Government agencies will be made automatically by FAA in the same manner as distribution of this basic part.

# Part 77--Objects affecting Navigable Airspace

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## **Adoption of Revised Part 77**

**Adopted: February 3, 1965**

**Effective: May 1, 1965**

**(Published in 30 F.R. 1837, February 10, 1965)**

This revision of Part 77 of the Federal Aviation Regulations relaxes and simplifies the requirements for notice to the Agency of certain proposed structures, consolidates obstruction standards for use in the several Agency programs, and streamlines the Agency procedures for determining the effect of proposed structures on air navigation.

The proposed revision was published in the Federal Register (28 F.R. 7788-7795) on July 31, 1963. Extensive comments were received from aeronautical and non aeronautical sources which endorsed generally the changes under consideration. These comments were very constructive in nature and the Agency appreciates the cooperative spirit in which they were submitted. Since the discussion here must necessarily be a limited review and explanation of the principal actions being taken, the Agency is unable to give specific recognition to each comment. However, each person who participated may be assured that full consideration was given to his recommendations.

The first noteworthy departure in this amendment from the revisions originally proposed relates to the statement in Subpart A-General on the lack of application of Subparts B, D, and E to construction work begun before July 15, 1961. This has been deleted as unnecessary and possibly misleading. The extensive amendments made by this revision to all portions of Part 77 will take effect at the effective date provided herein. Notices received after this date will be processed under the provisions of Part 77 as revised. Aeronautical studies begun prior to this effective date will be continued under the new provisions.

Public reaction to the proposed revisions of the notice requirements disclosed a need for several adjustments. The first of these involves the requirement for notice to the Agency of any proposed structure which would pierce an imaginary slope of 100 to 1 extending from the property line of an airport listed in the "Airport Directory" of the Airman's Information Manual. The property line was selected as a point of beginning because of its greater availability to the public. This feature appears to be an inadequate substitute for the most appropriate point of beginning, that is, the nearest point of the runway nearest to the site of the proposed structure. The use of this point also fixes the elevation of the beginning of the pertinent imaginary slope at the elevation of that nearest point. In addition, the scope of the notice requirement has been substantially reduced. The horizontal distance of the 100 to 1 slope has been restricted to 20,000 feet and will now be applied only to airports with the longest runway more than 3,200 feet in length. For airports with the longest runway 3,200 feet or shorter, a 50 to 1 slope is prescribed for a horizontal distance of 10,000 feet. The FAA "Directory" furnishes the length of the longest runway at each airport. The notice requirement for helicopters now has a horizontal slope of 25 to 1 extending for 5,000 feet.

These notice requirements are made applicable for airports which are either listed in the "Directory" or are operated by a Federal military agency. We have determined that military airports need not be included in the "Directory" in view of their listing in military publications and the fact that their presence is generally well known to people living or owning property in their vicinity. In those cases where the boundaries of a runway of an airport, including a seaplane base, are not designated, the notice requirement of section 77.13(a)(2) will, obviously, not be applicable. However, the notice requirement would apply to those airports which have large sod, or other unpaved areas designated for the takeoff and landing of aircraft. Those areas constitute the runways from which the notice slope is computed. Also, the "Directory" will not list those airports constructed after December 31, 1958, which were the subject of a determination by the Agency that their establishment was not acceptable and would • have an adverse effect on the efficient use of airspace and the safety of aircraft.

While this amendment simplifies the current notice requirements, it is recognized that many construction proponents may nevertheless experience difficulty in ascertaining whether they are required to notify the Agency of their proposed structures. The Airspace Utilization Branch in each FAA regional office is staffed with technicians who are available to inform any interested person of the effect of these notice requirements on a specific construction

proposal. These technicians will also describe the airspace assignments and aeronautical operations in the area of the construction site so that the proponent may make an informed decision on the feasibility of the site and the availability of other areas which may serve his purpose equally and without derogation of air safety.

The substantial number of comments on the shielding provision of section 77.15 which excuses certain construction and alteration proposals from the notice requirements indicates a further explanation would be in order. The shielding provision adopted here is more restrictive than the one previously employed. This limitation was found necessary because of the unjustified extension of the earlier provision by certain construction proponents. As adopted, the shielding exemption is applicable only in the congested areas of cities, towns, and settlements, and then only to structures so shielded that they could not possibly derogate the safety of air navigation. It should be emphasized that this provision does not represent the Agency shielding criteria. It only relates to the exception from the notice requirements. Upon receiving the required notice, the Agency conducts an appropriate aeronautical study of the proposed structure and, in the course of that study, determines whether it would be, in fact, shielded.

The provisions describing the Agency acknowledgment of notices of construction proposals have been further simplified. The acknowledgment will advise each construction sponsor on two subjects, the possible application of the Agency marking and lighting standards, and whether the proposed structure may be a hazard to air navigation. On the first, the acknowledgment advises whether the construction proposal would be of a type included under the provisions of the FAA Manual on "Obstruction Marking and Lighting" and, if so, how the structure should be marked and lighted. On the hazard question, the acknowledgment will generally state whether the construction or alteration would exceed any of the obstruction standards of Subpart C and will either include a determination on whether the structure would be a hazard to air navigation or advise that further study is required to resolve the question. In the relatively few cases where the structure would exceed an obstruction standard and, in addition, would be located within a runway clear zone or the part of the primary surface extending beyond the end of a runway, the acknowledgment advises that the structure would be a hazard to air navigation. As indicated by this discussion, we have determined not to substitute the phrase "adverse effect on air navigation" for "hazard to air navigation." The Agency review of this portion of the proposal and the comments received with respect to it have disclosed that the "hazard" terminology is preferable.

The obstruction standards adopted here differ in many respects from those originally proposed. Upon review of the comments, the Agency has determined that the obstruction criteria most appropriate for promulgation at this time for civil airports, including joint-use airports, should be drawn more directly from the existing Technical Standard Order TSO-N18, "Criteria for Determining Obstruction to Air Navigation." In view of the substantial length of time that the TSO-N18 criteria have been employed for civil aviation purposes, the adoption of these criteria as the consolidated Agency criteria for use in the performance of the statutory functions authorized by the Federal Aviation Act and the Federal Airport Act should result in the least possible disruption of the performance of those functions.

The obstruction standards now presented in Subpart C are less stringent than those contained in the notice of Proposed Rule Making. The 200-foot limiting height of section 77.23(a) is now to be applied only within three statute miles of an airport with its longest runway more than 3,200 feet in length, rather than the proposed five statute miles. While there is an additional limiting height, beginning at 100 feet within instrument approach areas within three miles of the end of the runway and increasing to a maximum of 250 feet within ten miles from the runway end, this height is largely duplicative of other limiting heights or surfaces and does not constitute a substantial addition to the standard previously considered. We might note, in explanation of the use of the term "runway" here, that this term is now used, exclusively throughout the Part, and the term "landing strip" has been deleted to eliminate a possible ambiguity.

In sections 77.25 and 77.27, criteria are provided for all civil airports, including those constructed to "VFR Airports" standards. These standards are currently contained in the Advisory Circular 150/ 5300-1, "VFR Airports," and are prescribed for airports constructed to serve only aircraft operating under the Visual Flight Rules. The horizontal and conical airport imaginary surfaces provided in section 77.25 with respect to airport reference points are classified for (1) "VFR Airports," and (2) other airports in accordance with the planned length of the longest runway at each such airport.

The airport imaginary surfaces prescribed in section 77.27 based on runways, except those for "VFR Airports," have been reclassified so that their sizes depend upon whether the runway is equipped with a precision landing aid, such as an instrument Landing System. Runways having instrument approach procedures based upon such facilities as a VOR, ADF, ASR, low frequency range, or TACAN are now provided with the same type surfaces as runways used only for VFR operations, except those on "VFR Airports."

The Department of Defense has forwarded obstruction criteria which differ from those applied here for civil airports. The Department has requested that the criteria be incorporated into Part 77 for application at military airports, except heliports, controlled by components of the Department of Defense, where the longest runway exceeds 5,000 feet. The Department advises that these separate criteria are required at military airports because of

the operating characteristics of certain military aircraft, the necessity for low-altitude maneuvering and formation takeoffs, the more stringent air crew training, and the armament and ordnance-carrying requirements of the military. Accordingly, these criteria are stated herein in section 77.28. The Department is developing criteria for application at military airports with shorter runways than 5,000 feet; and until these criteria are developed, civil airport criteria will apply at such military airports. Also, pending development of these criteria, the military standards for the 2,000-foot width of primary surface will apply only to runways longer than 5,000 feet. The Agency will study the military criteria to determine their potential adaptability to civil airports and their appropriate consolidation with the civil criteria.

The presence of two sets of criteria, applicable to civil and military airports, will not result in inconsistent conclusions in the aeronautical studies on whether a proposed structure would be a hazard to air navigation. These determinations are not controlled by the extent to which such a structure may exceed a civil or military obstruction standard but, rather, upon the possible hazardous effect of the structure on air navigation. A "hazard" or "no hazard" determination is reached after a review of the VFR and IFR operations and procedures involved, both present and prospective. Each study not only includes a review to determine whether the construction proposal might be so altered in location or height that it would not exceed an obstruction standard but, also, a review to ascertain if the structure could be accommodated by adjustment of the aeronautical procedures. Thus, there may be a substantial difference between a construction proposal which would exceed an obstruction standard and one which is determined, as the result of the aeronautical study, to be a hazard to air navigation.

The airport imaginary surfaces proposed for helicopters have been substantially revised for compatibility with the current "Heliport Design Guide." The primary surfaces coincide in size and shape with the takeoff and landing area of each heliport. The designated approach clearance surfaces begin at the edge(s) of the primary surface and extend outward and upward at a slope of 8 to 1. The approach surface is a trapezoid whose inner width is coincident with the width of the primary surface and which extends to the minimum enroute altitude where its width is 500 feet. Transitional surfaces extend outward and upward at a slope of 2 to 1 from the lateral boundaries of each primary surface and approach surface for a horizontal distance of 250 feet from the centerline of these surfaces.

One of the minor revisions of the obstruction standards made here might also be mentioned. The proposed addition of a 17-foot height to a highway prior to the application of the obstruction criteria evoked several protests. The 17-foot clearance was proposed as a compatible measure with current Federal policy for interstate highways. To avoid an unnecessary extension of this policy, the standard here has been adjusted to permit application of the current 15-foot figure to highways which will not be used by the higher vehicles. In addition, we have added a provision which removes the requirement for the addition of any figure, 15 feet or 17 feet, to a traverse way which is under the coordinated traffic control of the airport management or the air traffic control tower.

We might conclude this brief reference to some of the salient features of the obstruction standards of Subpart C by emphasizing this Subpart may be applied with respect to air navigation facilities planned for future installation or alteration and to planned uses of the navigable airspace by aircraft if that application would result in a lower limiting height or surface. This point is of particular significance in regard to an airport since it includes all runway extensions and other improvements which may be contained in the approved airport layout plan.

The revisions in the procedures for the conduct of aeronautical studies, public hearings on the effect of proposed structures on the navigable airspace, and the establishment of antenna farm areas have been adopted substantially

as proposed. Section 77.37 has been broadened to make available a review by the Administrator of each decision by a Regional Director on the effect of a proposed structure on air navigation, including "no hazard" determinations made without notice to any possible interested aeronautical source. While decisions of this type are only made in cases where the available evidence clearly indicates that air safety would not be affected by the construction, this review procedure is nevertheless provided to insure against possible error. The effective period fixed in section 77.39 for a determination of no hazard has been extended in recognition of the time necessary for the processing by the Federal Communications Commission of an application for a construction permit and the issuance of that permit. Appropriate safeguards for the protection of air navigation have been attached to this extension of time.

The comments in response to the Notice of Proposed Rule Making included a number of recommendations for Agency action beyond the authority contained in the Federal Aviation Act of 1958. That Act does not contain a basis for the mandatory marking and lighting of structures to warn pilots of aircraft of those structures. Neither does it contain specific authorization for regulations which would limit the heights of structures. To date, no judicial decision has been issued on the extent to which ground structures may constitute an unlawful interference with the public right of freedom of transit through the navigable airspace recognized in Section 104 of the Act. Until authoritative guidance is received on that point or express legislative authority is conferred, the Agency measures in the field of ground hazards to air navigation will be limited to the areas presently covered in Part 77.

In consideration of the foregoing, Part 77 of Chapter I of Title 14 of the Code of Federal Regulations is revised, effective May 1, 1965, to read as hereinafter set forth.

This amendment is made under the authority of Sections 104, 307, 313, 1001, and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1304, 1348, 1354, 1481, 1501).

### **Amendment 77-1 \***

#### **Miscellaneous Amendments**

**Adopted: May 11, 1965**

**Effective: May 11, 1965**

**(Published in 30 F.R. 6713, May 18, 1965)**

The purpose of this amendment is to make certain minor clarifying amendments to Part 77 of the Federal Aviation Regulations, which became effective on May 1, 1965.

Section 77.19, by reference to section 77.28(b) in the last paragraph, provides for application of the dimensions of clear zones for runways at civil airports to runways at all military airports. This was not intended. As currently written, section 77.28(b)(1) states that the primary surface for military airports is "the same elevation as the centerline of the runway." The section is being revised to make it clear that the primary surface undulates with the underlying surface.

In the interest of timely correction of these discrepancies, in view of the May 1, 1965, effective date of revised Part 77, and since these amendments are clarifying in nature, I find that notice and public procedure are impracticable and contrary to the public interest and that this amendment may therefore be made effective immediately.

In consideration of the foregoing, Part 77 is amended, effective immediately, as follows.

This amendment is made under the authority of Sections 307, 313, and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354, and 1510), and Executive Order 10854 (24 F.R. 9565).



## **Amendment 77-2**

### **Form and Time of Notice**

**Adopted: July 6, 1966**

**Effective: July 12, 1966**

**(Published in 31 F.R. 9448, July 12, 1966)**

The purpose of this amendment is to establish an Agency policy applicable to proposals filed under section 77.13 of the Federal Aviation Regulations for any construction or alteration in excess of 2,000 feet aboveground. This amendment is a general statement of policy and is procedural in nature. Therefore notice and public procedure hereon are unnecessary and the amendment may be made effective in less than 30 days after publication.

The Federal Aviation Agency has analyzed the recent trend of competitively taller television antenna towers to determine its effect on safety in air navigation. It has long been recognized by this Agency that antenna towers of adequate height are necessary to serve the public interest in a nation-wide broadcasting system. However, there has been a proliferation of antenna towers accompanied by a progressive increase in heights over 1,000 feet above the ground that now presents hazardous conditions to the safety of air navigation. The Agency is of the firm belief that the reasonable interests of the communications industry and the aviation community be accommodated

\* Included in the publication of Part 77.

concurrently. To this end, the Federal Communications Commission recently declared in Public Notice FCC 65-455 that "the public interest in broadcast service, may in some instances call for an antenna tower higher than any particular maximum imposed." However, the FCC was "nevertheless convinced that the public interest requires a specific ceiling to halt the upward trend in antenna tower heights, and that 2,000 feet above ground is both realistic and appropriate."

The Federal Aviation Agency, within the limits of its jurisdiction, has attempted to find a remedy for air safety problems inherent in the conflicting demands for a fair and reasonable sharing of airspace by tall towers and aircraft. Part 77 of the Federal Aviation Regulations established procedures for reporting to the Agency proposed construction that may constitute potential obstructions or hazards to safe air navigation as determined by the application of criteria stated therein. Under these regulations, the FAA advises the construction proponent whether his proposal would constitute a hazard to air navigation. During the time the regulation has been in effect, hundreds of proposed television and radio towers have been considered. Procedures permitting such analysis by the Agency have been of considerable value to the aviation community and to the broadcasting industry in eliminating both geographic and airspace conflicts created by their competing requirements.

In spite of steps already taken to ensure the accommodation of these competing interests, it has been determined that the cumulative effect of heights and locations of towers, both actual and proposed, have created a situation that is hazardous to safe air navigation.

On February 18-19, 1965 the Agency made the following statement to the House Committee on Interstate and Foreign Commerce concerning H.J. Res. 261, which would limit the height of certain radio and television towers:

The FCC has allocated the TV channels of the Nation on the basis of maximum power television broadcasting at a height of 2,000 feet. Whenever a television tower exceeds this 2,000-foot limitation in most areas (it is 1,000 feet for VHF TV stations in the eastern part of the United States) the power must be reduced to compensate for the increased height.

Therefore, there is no compelling need for any tower to be in excess of 2,000 feet. Although there may be a need for 2,000-foot television towers, under some conditions we would be derelict in our duty as the allocator of the airspace if we permitted all towers to be constructed to a height of 2,000 feet wherever the broadcaster desired.

The 2,000-foot tower with its problems of visibility is inherently hazardous to air navigation.

The Agency therefore considers that it is necessary to take steps to minimize the construction of any antenna tower to a height of more than 2,000 feet aboveground unless it is fully justified in accordance with this Part. This action applies equally to any other structure whose height is proposed to exceed 2,000 feet aboveground, even though the most pressing current problem relates to antenna towers. It is expected that this action will encourage proponents of tower or other type construction to formulate realistic plans, thereby avoiding unnecessary and costly proceedings before the Federal Aviation Agency. In addition, the regulation will be flexible enough to accommodate a proposal for a tower or other type construction more than 2,000 feet high in the event the proponent can demonstrate that it would not be a present or reasonably foreseeable hazard to safe air navigation.

It is of course recognized that towers or other structures with heights of less than 2,000 feet above the ground may be hazardous to air navigation, especially where they are located near airports, Federal airways or VFR routes. However, the problems engendered by these situations are totally different from the potential hazards precipitated by the taller towers. Proposed tall towers and other type structures of less than 2,000 feet will continue to be studied carefully on an individual basis to determine whether they present any adverse effects on safe air navigation or cause an inefficient utilization of navigable airspace. The Agency is convinced that from an air safety standpoint the designation of a specific ceiling is needed to halt the upward trend in heights of various type structures. As a general policy, this Agency considered 2,000 feet above the ground to be the maximum height of structures that may be acceptable for maintaining safe navigation. Any structure proposed in excess of 2,000 feet above the ground will be considered to be, inherently, a hazard to air navigation and an inefficient utilization of the airspace. It will be incumbent upon the proponent to overcome this technical assumption by demonstrating to the Agency that such a proposal will not create an inefficient use of airspace or constitute a hazard to air navigation.

In consideration of the foregoing, Part 77 of the Federal Aviation Regulations is amended, effective July 12, 1966.

This amendment is made under the authority of Sections 307, 313, and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354, and 1510).

### **Amendment 77-3**

#### **Alteration of Discretionary Review**

**Adopted: May 1, 1967**

**Effective: June 5, 1967**

**(Published in 32 F.R. 6970, May 6, 1967)**

The purpose of this amendment is to exclude determinations of no hazard made under 77.19(c)(1) from the applicability of discretionary review provided in 77.37.

The FAA published a notice of proposed rule making in the Federal Register on August 23, 1966 (31 F.R. 11155), circulated as Notice 66-34, proposing to exclude no hazard determinations relating to those structures for which a notice must be filed under 77.13 but which would not exceed any standard of Subpart C of Part 77, and therefore would be neither an obstruction nor a hazard. Under the FAA's published criteria the proponent of a structure in this category could be given only a no hazard determination. However, under 77.37 the proponent should wait 30 days to allow any interested party the opportunity to petition for a discretionary review that could only result in a substantiation of the no hazard determination.

Comments received in response to the notice indicated a general understanding of the unneeded delay of 30 days preceding finality of the determination and generally endorsed the proposal. Objections were received to the proposal that were directed to procedural delays encountered in disseminating information concerning the proposed structure to airspace users.

The Air Line Pilots Association objected, stating that local authority would not have an opportunity to study a proposed construction with regard to local zoning ordinances, and to assess the "effects" of the proposal on aviation in that location. A proponent must, of course, obtain any necessary approval from local government authorities prior to construction, including zoning approval if any, which would consider the effects on local property interests. Elimination of the provision for discretionary review by the FAA would have no effect on any requirement local authorities may impose on the proponent.

The Department of the Air Force objected, stating that the elimination of a 30-day delay would not permit proper treatment of aviation considerations because of the length of time involved in obtaining and assessing the effect of the proposal. Particularly, the Air Force is concerned with training flights at very low levels for which a structure of moderate height could be a hazard, and which may be erected before the Air Force representatives would be aware of its existence. Part 77 was never intended to provide protection for very low level military training operations. If every structure that may be an obstruction to flights of this nature should be called a hazard, the public would be overburdened, and a hazard determination would be meaningless. The portion of the comment relating to the delay in obtaining information is pertinent, and coincidentally is similar to a comment received from the Department of the Navy in concurring with the proposal. The FAA will review its procedures to insure appropriate coordination and timely dissemination of information to appropriate parties, including military representatives.

Some comments, conceding that a delay of 30 days may be burdensome in particular circumstances, suggested that a provision be promulgated to waive the 30-day period in circumstances of hardship, or that the 30-day period be retained when an interested party specifically requests its retention to permit time for filing a petition for review. One comment suggested eliminating acknowledgments issued under 77.19(c)(1). Retention of the 30-day period under normal circumstances while waiving it in cases of hardship would base the decision for discretionary review upon the circumstances of the proponent rather than the effect upon aeronautical operations. If under the standards of Part 77 a structure could be neither an obstruction nor a hazard, periods of delay and additional reviews could not alter the determination. Moreover, issuing waivers would be time-consuming and administratively inefficient where the necessity of review is nonexistent.

In consideration of the foregoing, 77.37 of the Federal Aviation Regulations is amended, effective June 5, 19-7.

This amendment is made under the authority of Secs. 307, 313, and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354, and 1501).

## **Amendment 77-4**

### **Standards for Determining Obstructions**

**Adopted: September 6, 1967**

**Effective: November 12, 1967**

**(Published in 32 F.R. 12997, September 13, 1967)**

The purpose of this amendment is to eliminate the requirement that the FAA must find any structure exceeding the applicable obstruction standard and located within an airport runway clear zone or the portion of a primary surface extending beyond the end of a runway to be a hazard to air navigation, regardless of any mitigating factor.

The FAA published a Notice of Proposed Rule Making in the Federal Register on March 9, 1967 (32 F.R. 3887), circulated as Notice No. 67-7 proposing the elimination of the mandatory finding of hazard, thereby permitting the FAA to study all factors involved and make a finding based on the particular situation. The response to the notice indicated a general endorsement of the proposal. Due consideration was given to all comments received.

The Air Line Pilots Association withheld endorsement because the FAA had not indicated what factors it presently considers before granting an exemption to a proposal for an obstruction in a clear zone. It stated it had difficulty in visualizing any mitigating factor relative to an obstruction within a clear zone, and making it easier to allow an obstruction would undoubtedly increase the number of obstructions and decrease the safety margin.

Under the present regulation, we have granted exemptions in cases, there among other matters, the proposed construction, though in a clear zone, was shielded from aircraft flight paths; or where the structure was of a temporary nature such as construction machinery or rigs used in constructing a public water system and erected for use only during daylight hours under VFR conditions.

With the deletion of 77.19(c)(4), the FAA could subject any construction proposal within a clear zone that exceeded the applicable obstruction standards to an aeronautical study in accordance with 77.19(c)(3). The study, which may be reviewed by all interested persons, would determine whether the proposed construction could be a hazard. Pending such a determination the construction would be presumed to be a hazard as provided in that section.

This amendment will not reduce the protection to runway approach areas presently afforded by 77.19(c)(4), but would retain that protection through the application of 77.19(c)(3). It is not the intent of this amendment to make it easier for obstructions to be based in approach areas or to relax the position of the FAA with regard to such obstructions. This amendment will permit the FAA to exercise its discretionary authority in determining whether the obstruction will in fact be a hazard after reviewing all of the relevant factors. In so doing, the public will be made more aware of the proposed obstruction through circularization and notice, and will be given an opportunity to present relevant comments. Additionally, it will make unnecessary the present practice of granting exemptions from the notice requirements of Part 77 through a procedure recognized as time consuming and inefficient.

In consideration of the foregoing, Part 77 of the Federal Aviation Regulations is amended, effective November 12, 1967.

These amendments are made under the authority of 307, 313, and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354, 1501).

## **Amendment 77-5**

### **Miscellaneous Amendments**

**Adopted: March 25, 1968**

**Effective: May 2, 1968**

**(Published in 33 F.R. 5255, April 2, 1968)**

The purpose of these amendments is to make minor substantive changes and editorial corrections to Part 77.

The FAA published a notice of proposed rule making in the Federal Register on July 14, 1967 (32 F.R. 10373). circulated as Notice No. 67-29 which proposed a number of minor substantive amendments and editorial corrections to Part 77 that would clarify the intent or would make the part consistent with the FAA's current practice or organization.

Comments received to the notice indicated a general endorsement of the proposal. A number of comments suggested changes or improvements that have been incorporated herein. Due consideration was given to all comments received.

One comment raised a question on whether this proposal would increase the protection for airports with at least one runway of 3,200 feet. The proposed revision of ~77.13(a)(2) (i) and (ii) would make no change to the current notice requirement criteria. It would merely add the term "actual length" to clarify the intent that the runway length referred to in that section is the actual and not the "corrected" runway length. The actual runway length is selected because this is the measurement provided in the FAA Airport Directory, the Alaska and the Pacific Airman's Guides and Chart Supplements and is the length that the construction sponsor would see on the airport. The general public would have no means of readily determining a corrected runway length, as referred to in the proposed revision of 77.23(a)(8). and which is used by the FAA in applying its standards for determining obstructions.

The notice proposed to revoke 77.13(a)(5) which requires a notice, when requested by FAA, for any construction proposal that would be in an instrument approach area and available information indicates that it may be an

obstruction to air navigation. Information from the FAA's regional offices indicates that this provision has been used in a number of cases to obtain specific data on height and location after general information on the construction became available. This provision is therefore retained but is redesigned as 77.13(a)(4).

A new 77.2, *Definition of terms*, is included to clarify the meaning of certain terms used in this amendment.

Several comments objected to 77.1 3(a)(5)(ii) as redesigned herein, which included a planned or proposed airport within the category of airports for which the notice criteria applies, pointing out that frequently sponsors would have no way of ascertaining the sites of planned airports without an inquiry to the FAA each time, or consulting a currently maintained list of planned or proposed airports. There is merit to these comments and the amendment to that section has been revised to include only those airports under construction. Sponsors will be able to see work in progress on airports near the proposed construction and the benefits of this part will be available to those airports.

Some comments suggested that proposed 77.15(c) should be revised to clarify the phrase "approved by the Administrator" and to list the facilities to which that paragraph applies. The amendment has been revised to reflect the intent that the types of facilities and devices that have been approved by the Administrator are the subject of the reference. "Air Navigation facility" is defined in section 101(8) of the Federal Aviation Act of 1958. Therefore, it is unnecessary to again list those facilities to which the notice requirements do not apply.

The Air Line Pilots Association objected to exempting any object or structure from the notice requirements and obstruction standards. It is recognized that some of the structures exempted from the notice requirement may be obstructions to air navigation. However, these exemptions are based on the need to provide a reasonable notice that can be applied and complied with by a construction proponent. A notice requirement similar to the obstruction criteria of Subpart C of this part would be impracticable in application. The exemption of certain structures, e.g. antenna structures of 20 feet or less in height, and airport or FAA navigational aids, has been found advantageous to both the FAA and industry. Therefore, certain necessary structures, although they may be obstructions, are exempted because of their utility or the relative absence of any hazard associated therewith.

Editorial changes have been made to 77.17 to reflect the current procedure of sending notices of proposed construction to the appropriate area office instead of a regional office. The identity and address of the appropriate FAA area or regional office may be obtained from any FAA facility, therefore a listing of the respective jurisdictions and addresses is omitted.

Editorial changes have been made to 77.17(d) including the redesignation of paragraph (d) as paragraph (e), because of the intervening effectiveness of another amendment subsequent to the circularization of Notice No. 67-29.

Sections 77.11(b)(3) and 77.19 have been amended to refer to the current designation of the FAA advisory circular on "Obstruction Marking and Lighting".

The wording of 77.21(a) has been rearranged for readability without making any substantive change. One comment made the same objection to 77.21(c)(2) as to the notice criteria under ~77.13(a)(5)(ii) that the public would be unable to comply with that section since it could not be aware of airports existing only in the planning stage. This comment is not valid since the standards thereunder are applied by FAA specialists to whom this data would be available.

In consideration of the foregoing, Part 77 is amended, effective May 2, 1968, as hereinafter set forth.

(Secs 307, 313, 1101, Federal Aviation Act of 1958; 49 U.S.C. 1348, 1354, 1501)

## **Amendment 77-6**

## **Objects Interfering With Air Navigation Facilities**

**Adopted: July 25, 1968**

**Effective: August 31, 1968**

**(Published in 33 F.R. 10842, July 31, 1968)**

The purpose of this amendment to Part 77 of the Federal Aviation Regulations is to permit the Administrator to consider the effect a proposed construction or alteration would have upon the operation of an air navigation facility.

The substance of this amendment was published as a Notice of Proposed Rule Making in the Federal Register on December 21, 1967, (32 F.R. 20658) as NPRM 67-54. Many comments were received in response to the Notice. Generally, the comments were favorable and recommended adoption of the amendment as proposed.

Part 77 of the Federal Aviation Regulations establishes standards for determining obstructions in navigable airspace, sets forth the notice requirements of certain proposed construction or alteration, provides for aeronautical studies of obstructions to determine their effect on the safe and efficient use of airspace and provides for public hearings on the hazardous effect of proposed construction or alteration. In accordance with previous interpretations and practice, this part applies to the physical effect of an obstruction on the flight of aircraft through the navigable airspace.

The Federal Aviation Administration is encountering with increasing frequency, situations where construction or alteration has a deleterious effect on the operation of air navigation facilities without being a physical hazard in the flight path of aircraft. These situations have ranged from construction which partially blocked the view from an airport air traffic control tower of runways, taxi, and parking areas, to obstructions which blocked or reflected electromagnetic radiation in the vicinity of navigational aids like radio or radar installations. In some instances, the navigational aid could be moved to an interference-free location. In other situations, however, no interference-free locations were available, or the cost of razing and relocating facilities, because of their size or number, was exorbitant.

It appears desirable that when an aeronautical study is made, the Administrator should include in that study the effect that construction or alteration may have on the operation of air navigation facilities. It would be an unreasonable burden on the public to require a proponent to consider this effect because the public may not be aware of the existence or operational characteristics of an air navigation facility, and any effect thereon may not easily be ascertained by the proponent. Accordingly, the Administrator should have the authority of including in an aeronautical study the physical or electromagnetic effect of proposed construction on air navigation facilities. The study may enable the Administrator to recommend changes in the design, location, or construction material that would eliminate or reduce interference with the operation of the air navigation facility. A reduction or elimination of interference may permit the retention of existing approach minimums, use of existing runways or facility structures or avoid costly relocation expenses to the airport or the FAA.

All of the parties that submitted comments concurred in or endorsed the proposed amendment, except the Airport Operators Council International, the Department of Aviation, City of Atlanta, Georgia, and the Air Transport Association of America.

The Airport Operators Council International stated that it strongly opposed the proposed amendment primarily for the following reasons:

- (1) The FAA already has sufficient authority to minimize critical encroachment upon airport control tower sight lines through its ability to NOTAM and therefore needs no additional authority.
- (2) It is undesirable to use the proposed amendment to protect off-airport nav aids from the deleterious effect on their operation by construction proposals over which the airport has no control.

Regarding the first comment, the FAA's present authority allows it to issue a Notice to Airmen to advise them concerning areas on an airport in which ground control of traffic cannot be maintained due to blocking of line-of-sight from the airport control tower. When such a condition exists, the derogation of air traffic control has already

taken place and a NOTAM merely advises of that condition. The purpose of this rule is to prevent the condition from arising in the first place.

As far as the second comment is concerned, this amendment intends to include consideration of the physical or electromagnetic effect on the operation of air navigation facilities of any construction proposal for which a notice is required under Section 77.13(a), and would exceed any standard of Subpart C, regardless of whether the facilities are located on or off an airport.

The Department of Aviation, City of Atlanta, Georgia, opposed the proposed amendment primarily on the ground that it felt that this amendment would allow the location and functioning of an FAA air navigation facility to control all other airport development prospects. The Department also stated that it felt that the present Federal Aviation Regulations were adequate to handle obstructions to airport control towers and air navigation facilities.

The aeronautical study may enable the FAA to recommend changes in the design, location or construction material that may eliminate or reduce interference with the operation of the air navigation facility. These recommendations would be made to the construction sponsor and not to the airport operator unless the construction proposal was one over which the airport operator exercised control. Proposed construction or alteration subject to an aeronautical study under the proposed amendment would be limited to those proposals for which notice to the Administrator is now required under Section 77.13(a) of Part 77, FAR, and the proposal would exceed any standard of Subpart C. Proposed construction or alteration of airports that would not require notice under Section 77.13(a) would not come within the scope of the proposed amendment even though there may be a possibility that the proposed construction or alteration might adversely affect the operation of a nearby air navigation facility.

It is not the purpose of the proposed amendment to institute control over any aspect of airport development but (1) to consider the physical and electromagnetic effects of any proposed construction or alteration on air navigation facilities, during an aeronautical study; (2) to inform the construction sponsor, if necessary, of possible interference and how to avoid it; and (3) where the construction proposal would have a substantial adverse effect upon the operation of any air navigation facility to issue a determination of hazard. Current Federal Aviation Regulations do not provide the FAA with authority to study proposed construction or alteration for the purpose of determining their physical and electromagnetic effect on the operation of air navigation facilities.

The Air Transport Association (ATA) did not oppose the proposed amendment, but made several suggestions. Among them ATA commented that FAA has published few guidelines for construction facilities on or near airports and such guidelines should be published by FAA prior to amending Part 77 as proposed.

In addition, ATA felt it should be made clear that airport control towers are not air navigation facilities in the sense of the proposed rule. ATA comments are under careful consideration and the FAA at the present time is engaged in a project to develop new criteria to determine whether proposed construction would affect the operation of air navigation facilities. The intent of the amendment to Part 77, however, is not to revise or develop criteria but to provide the authority to consider possible interference with the operation of air navigation facilities during the aeronautical study of construction proposals. At such time as new criteria have been developed a determination will be made as to their adequacy and whether they should be incorporated in the regulation.

In consideration of the foregoing, Part 77 (77.31 and 77.35) of the Federal Aviation Regulations is amended effective August 31, 1968.

This amendment is made under the authority of sections 307, 313, and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354, 1501).

## **Amendment 77-7**

## Utility Airports

**Adopted: October 25, 1968**

**Effective: November 30, 1968**

**(Published in 33 F.R. 16056, November 1, 1968)**

The purpose of this amendment is to include in Part 77 of the Federal Aviation Regulations a reference to "Utility Airports," as appropriate, with each reference to "VFR Airports" standards.

Subpart C of Part 77 contains several references to airports constructed to "VFR Airports" standards. The "VFR Airports" standards and the Advisory Circular in which they were contained were canceled and replaced with Advisory Circular 150/5300-4, "Utility Airports--Design Criteria and Dimensional Standards." Since those airports built to VFR Airports standards continue in existence, Subpart C must be revised to refer to both VFR and Utility Airports.

Since this amendment merely includes in Part 77 a reference to publications and standards currently in use, I find that notice and public procedure hereon are unnecessary.

In consideration of the foregoing, Part 77 (77.25 (a)(1) and (b)(1) and 77.27 (a)(1) and (c)(2)(i)) of the Federal Aviation Regulations is amended, effective November 30, 1968.

These amendments are made under the authority of Sections 307, 313, and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354, and 1510).

## Amendment 77-8

### Revision of Notice Form

**Adopted: December 11, 1968**

**Effective: February 1, 1969**

**(Published in 33 F.R. 18614, December 17, 1968)**

The purpose of this amendment to Part 77 of the Federal Aviation Regulations is to revise the reference to the form on which notices of proposed construction or alteration are filed to reflect the new form number that has been adopted and to correct an editorial error.

The FAA is adopting Form 7460 1 entitled, "Notice of Proposed Construction or Alteration" to replace Form 177. This form more adequately reflects informational requirements concerning proposed construction or alteration of objects which might effect navigable airspace. Reference is made to FAA Form 117 in several places throughout Subpart B of Part 77. Therefore, an amendment is required to revise the references to this notice form.

Amendment 77-6, effective May 2, 1968, to 77.11 erroneously identified FAA Advisory Circular AC 70/7460-1 as AC 70/7460. Therefore, this section is being changed to reflect the correct advisory circular number.

In consideration of the foregoing, Subpart B of Part 77 ( 77.11(b)(3) and 77.17 (a) and (d)) of the Federal Aviation Regulations is amended, effective February 1, 1969.

This amendment is made under the authority of 307, 313 and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354, 1501), and of 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)).

## Amendment 77-9



**Standards for Determining Obstructions to Air Navigation**  
**Adopted: March 25, 1971** **Effective: May 16, 1971**  
**(Published in 36 F.R. 5968, April 1, 1971)**

The purpose of these amendments to the Federal Aviation Regulations is to change the standards for determining obstructions to air navigation.

These amendments were proposed in Notice 70-11 and published in the Federal Register on March 14, 1970 (35 F.R. 4554).

Twenty-five public comments were received in response to the Notice. A substantial number of comments were directed to the application of the obstruction standards and to suggestions for improving notice requirements. Since the subjects of these comments were not part of Notice 70 11, they were not considered in the formulation of the rule. However, they will be given full consideration by the FAA in its continuing efforts to improve Part 77.

Numerous comments were received in response to the FAA's request for public comment on two possible future changes to 77.25 which were not made part of the Notice. These two possible changes would revise 77.25 to specify (1) that the approach surface would begin 200 feet beyond the end of the landing threshold, and (2) that the slope of the transitional surfaces extending outward and upward from the edges of the primary surface would be 4:1 instead of 7:1. The comments reflected many viewpoints pro and contra. Several commentators stated that the approach surface to a runway should be related to the end of the runway, or to the displaced threshold if the landing threshold had been relocated, without applying the current 200-foot buffer zone between the landing threshold and the beginning of the approach surface. Others felt that the beginning of the approach surface should not be moved to relate to a displaced threshold unless the displacement was the result of some irrevocably fixed obstruction. Some opposition was expressed to changing the slope of the primary surface related transitional surfaces from 7: 1 to 4: 1. It was felt that no factual data or rationale had been presented to justify such a change. Further, it was suggested that such a change would result in unsafe structures near runways and might also affect CAT II missed approach requirements. On the other hand, some commentators suggested that the relaxation of the transitional surface slope would have certain advantages for locating airport parking gates for large airplanes; would be practical and desirable; and would be more realistic in view of current land use concepts. All of these comments will be given careful consideration by the FAA in determining its future action in this area.

While some revision of the proposal was effected in the light of the comments received, the amendment as adopted follows the general form of the Notice.

Several commentators proposed modifications for the definitions of the several categories of runways. Concern was expressed as to the use of the phrase "or any other FAA or military planning document" in the proposed definition of a visual runway; that an airport operator might be obligated or under control of a document to which he does not have access. In response. to these comments, the definition of a visual runway has been changed to clarify reference to a military approved airport layout plan as a plan for military airports only, and to amend the phrase referring to "any other FAA or military planning document" to specify any planning document submitted to the FAA by competent authority. This will include an airport layout plan or planning document submitted to the FAA by or through a state or local government.

Consideration was given to suggestions by commentators to include a variety of other definitions in 77.2. However, since the suggested terms have common dictionary definitions or are otherwise defined in the Federal Aviation Regulations, it was determined not to include these terms in 77.2. However, minor changes in the language of the proposed definitions in 77.2 have been made to state more clearly their purpose and use.

One comment concerning the proposed change to 77.13(a)(3) suggested that the railroad height adjustment should be modified so that the "highest possible or intended" object is considered, and that this should include all roads so

that plans would not be based upon heights that are impractical. The FAA considers that the height adjustments prescribed are needed for guidance when applying the notice requirement criteria, and should have limited flexibility. It should be noted that 23 feet is the highest tunnel clearance required for railroads in the United States, and this height would be in consonance with the requirements of the various states.

Several commentators objected to the proposed changes in 77.15(c) that would exclude from the notice requirement of 77.13 any air navigation facility, airport visual approach or landing aid, aircraft arresting device, or meteorological device, the location and height of which is fixed by its functional purpose, if a type approved by "an appropriate military service." After careful consideration of the objections, the FAA decided that type approval of devices and equipment on civil airports should remain with the Administrator. Therefore, the change to 77.15(c) as proposed, has been modified to exclude from the notice requirement of 77.13 any air navigation facility, airport visual approach or landing aid, aircraft arresting device, or meteorological device given type approval by an appropriate military service only when such facilities, aids, or devices would be located on a military airport.

Several isolated comments directed attention to the intention of the FAA to use the applicable MOCA instead of the established MEA as the basis for determining obstructions within an en route obstacle clearance area of a Federal airway or approved off-on airway route.

Even though some individuals or groups may consider this concept to be a new one, it is based on the rationale that through use of the MOCA alone and selectively applying the terms obstacle and obstruction to it, the application of the standards of Part 77 will be simplified and will result in bringing the entire system into conformity with intentional standards. In simplified terms, a MOCA is that minimum safe altitude that will permit an aircraft to traverse a designated area of airspace clear of obstacles below. Generally, the height of the highest or controlling obstacle in that airspace segment provides the imaginary obstacle reference line. The appropriate FAA personnel, applying established and specified standards then supply an additional amount of airspace above the obstacle reference line that forms the MOCA altitude level for that segment of flight.

In applying the standards of Part 77 to this airspace formulation, any proposed structure that does not exceed the obstacle reference line will be classified as an obstacle. However, if the proposed structure would penetrate this airspace above the obstacle reference line, it would be classified as an obstruction. Once a proposal is classified as an obstruction, under the procedures provided for in Part 77, it will be studied to determine whether it will or will not constitute a hazard to air navigation.

Accordingly, new ~ 77.23(a)(4) establishes that the MOCA instead of the MEA will be the basis for determining whether any object within any en route obstacle clearance area, including turn and termination areas. of any Federal airway or approved off-airway route will be classified as an obstruction to air navigation.

One comment was received concerning the proposed new 77.21 (b). The new paragraph was added to ensure proper application of the imaginary surfaces outlined in 77.25 at airports that have defined landing and takeoff strips. or pathways that are designated as runways but do not have specially prepared hard surfaces, or have a defined landing and takeoff area with no defined landing and takeoff strips or pathways designated as runways. For the purpose of Part 77, any clearly defined strip, pathway or lane designated by appropriate authority for the landing and takeoff of aircraft is considered to be a runway, even though its surface consists of water, turf, dirt or similar unprepared surface.

The application of new ~ 77.21(b) is based upon the philosophy that, at the thousands of airports having runways of various lateral dimensions without specially prepared hard surfaces, a factor common to each runway and its related primary surface is the centerline. This common factor permits application of the primary surface and the related transitional surfaces because the primary surface is longitudinally centered on the runway and the transitional surfaces extend outward and upward from the sides of the primary surface. Since the width of any primary surface is prescribed in 77.25(c), the width of that portion of any runway over which its primary surface is superimposed is limited by the width of the related primary surface, regardless of the runway width; the length of the primary surface, however, in this case, is the same as the length of the runway. In applying 77.21(b) to those airports, excluding seaplane bases, where the defined landing and takeoff area does not have any defined runways for the landing and

takeoff of aircraft, the agency would, applying the standards of the regulation, make a determination as to which portions of the area were being regularly used by aircraft as runways for landing and take off. The appropriate primary surface prescribed in 77.25(c) will then be centered on each portion of the landing and takeoff area determined to be used as a runway, with each end of the primary surface coinciding with the corresponding end of the determined runway.

Many commentators objected to the proposed amendment of 77.23(a)(2). After careful consideration of all objections to the proposed change, the FAA is convinced that with one exception the proposed revision should not be made. That exception is, that nautical miles will be used in lieu of statute miles in 77.23(a)(2) to conform to the units of horizontal measurement currently used in en route and terminal airspace configurations, and instrument procedures both nationally and internationally. Further study will be given to the need for relating the height of objects to the airport elevation where the terrain on which those objects are located exceeds the surfaces prescribed in ~ 77.25 or the heights prescribed in 77.23(a)(2).

The Notice proposed new 77.23(a) (3) and (4) to replace 77.23(a) (4), (5), (6), and (7). Comments on this proposal were generally favorable. Two commentators requested clarification of an en route obstacle clearance area and suggested that definitions of en route and terminal obstacle clearance be included in the regulation. Since we have already discussed in some detail the en route obstacle clearance area that falls within the scope of 77.23(a)(4), it only remains necessary to provide a brief explanation as to how obstacles and obstructions will relate to the terminal obstacle clearance area portion of the regulation provided for in 77.23(a)(3) of this amendment.

All approved procedures for instrument approach and departure of aircraft to and from airports that are conducted within specified terminal obstacle clearance and departure areas are established in conformity to the applicable criteria set forth either in the United States Standard for Terminal Instrument Procedures (TERPS) or the FAA Handbook 8260.19, Flight Procedures and Airspace. In the establishment of these instrument approach and departure criteria, the involvement of existing obstacles on the type of instrument procedure proposed for adoption, is one of the primary considerations. Accordingly, the standards of Part 77 applicable in any terminal instrument procedure area must also be based on the same obstacle concept that was used to formulate the applicable criteria of TERPS and FAA Handbook 8260.19. A brief explanation of the interrelationship of obstacles and obstructions to this concept should aid materially in understanding the provisions of 77.23(a)(3).

In the development of all types of instrument approach procedures under TERPS and departure procedures under FAA Handbook 8260.19, the method of establishing each such procedure is basically the same. The existing obstacles, including objects that are manmade, the terrain features, and the navigational facilities involving a particular approach or departure area are carefully analyzed, after which a prescribed plane, which is commonly referred to as an obstacle clearance plane, is established for that particular phase of flight. In order to insure maximum safety to all aircraft operators who may use that particular terminal instrument procedure, applicable FAA criteria is then applied to provide an additional layer of airspace above the prescribed obstacle clearance plane.

In applying the standards of Part 77 to this type of airspace structure, any object that does not exceed the obstacle clearance plane will be classified as an obstacle; but any object that penetrates the prescribed obstacle clearance plane will be classified as an obstruction, and subject to aeronautical study to determine whether or not it is a hazard to air transportation or air commerce.

Stated in another but in a more sophisticated way, any object that is located within an obstacle clearance area, including an initial approach segment, a circling approach area, or a departure area, is an obstruction to air navigation under the standards of Part 77, if it is of such height that the vertical distance between any point on it and any minimum instrument flight altitude established for any authorized instrument procedure within that area, is less than the obstacle clearance specified for that instrument procedure.

Several commentators addressed the proposed revision of 77.23. One commentator suggested that runways on air carrier airports be categorized as "air carrier" and provided with equal protection at both ends. The FAA feels that the rationale for the new categorization of runways has been explained adequately previously, therefore, this suggestion was not adopted.

Concern was expressed by some commentators as to the availability of information regarding the category of each approach to each end of each runway of any airport under consideration. The FAA agrees that the success of this concept is dependent upon definite information concerning the category of each approach to each runway end being available to the agency and to the public. This information will be available from FAA regional area offices, and from agency computer readouts.

In response to the suggestion of one commentator, 77.25(c) will be changed to include the words "or planned hard surface" after the words "has specially prepared hard surface." The FAA believes that this addition helps to clarify the intent of the section and does not modify the meaning.

Other minor changes of an editorial and technically clarifying nature have been made to the amendment. A minor change to the addresses under 77.17 has been included.

Interested persons have been afforded an opportunity to participate in the making of these amendments. Due consideration has been given to all matter presented. In other respects, for the reasons stated in the preamble to the notice, the rule is adopted as prescribed herein.

In consideration of the foregoing, Part 77 of the Federal Aviation Regulations is amended, effective May 16, 1971.

Sections 307, 313 and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1348, 1354, and 1501), and Section 6(c) of the Department of Transportation Act (49 U.S.C. 1655(c)).

## **Amendment 77-10**

### **Miscellaneous Amendments**

**Adopted: February 28, 1972**

**Effective: March 4, 1972**

**(Published in 37 F.R. 4705, March 4, 1972)**

The purpose of this amendment is to make certain minor editorial changes to Part 77 of the Federal Aviation Regulations.

Section 77.1 I(b) contains a reference to the sale of Advisory Circular 70/7460 1 entitled "Obstruction Marking and Lighting." Effective January 1, 1972, a revised edition of this Advisory Circular has become available free of charge from the Department of Transportation. Section 77.11 (b) is revised to reflect this change.

Throughout Subpart B of Part 77 there are several references to FAA area offices and personnel. Since all area offices were eliminated April 2, 1971, and reference to them is deleted and replaced with reference to the appropriate regional office or personnel.

Section 77.73 provides for the establishment of antenna farm areas under the procedural requirements of Section 4 of the Administrative Procedure Act. This citation is no longer accurate since the recodification of the Act, and appropriate language is substituted therefor.

Since these amendments are minor and editorial in nature and no substantive change is effected, notice and public procedure thereon are not necessary and good cause exists for making them effective on less than 30 days notice.

In consideration of the foregoing, Part 77 of the Federal Aviation Regulations is amended, effective March 4, 1972.

This amendment is issued under the authority of sections 313 and 1101 of the Federal Aviation Act of 1958 (49 U.S.C. 1354, 1501), and section 6(c) of the Department of Transportation Act (49 U.S. .C. 1 655(c)).

## **Amendment 77-11**

### **Organizational Changes and Delegations of Authority**

**Adopted: September 15, 1989**

**Effective: October 25, 1989**

**(Published in 54 F.R. 39288, September 25, 1989)**

**SUMMARY:** This amendment adopts changes to office titles and certain terminology in the regulations that were affected by a recent agency wide reorganization. These changes are being made to reflect delegations of authority that were changed, as well as offices that were renamed or abolished and replaced with new office designations. These changes are necessary to make the regulations consistent with the current agency structure.

**FOR FURTHER INFORMATION CONTACT:** Jean Casciano, Office of Rulemaking (ARM-1), Federal Aviation Administration, 800 Independence Ave., SW., Washington, DC 20591; Telephone (202) 267-9683.

### **SUPPLEMENTARY INFORMATION**

#### **Background**

On July 1, 1988, the FAA underwent a far-reaching reorganization that affected both headquarters and regional offices. The most significant change is that certain Regional Divisions and Offices, which formerly reported to the Regional Director, are now under "straight line" authority, meaning that these units within each Regional Office report to the appropriate Associate Administrator (or Chief Counsel) in charge of the function performed by that unit.

Within Part 11 of the Federal Aviation Regulations (FAR), various elements of the FAA have been delegated rule making authority by the Administrator. These delegations need to be updated. In addition, throughout the Federal Aviation Regulations references are made to offices that have been renamed or are no longer in existence as a result of reorganization.

Title 14 of the Code of Federal Regulations must therefore be amended to reflect the reorganizations and changes that have taken place.

#### **Paperwork Reduction Act**

The paperwork requirements in sections being amended by this document have already been approved. There will be no increase or decrease in paperwork requirements as a result of these amendments, since the changes are completely editorial in nature.

#### **Good Cause Justification for Immediate Adoption**

This amendment is needed to avoid possible confusion about the FAA reorganization and to hasten the effective implementation of the reorganization. In view of the need to expedite these changes, and because the amendment is editorial in nature and would impose no additional burden on the public, I find that notice and opportunity for public comment before adopting this amendment is unnecessary.

#### **Federalism Implications**

The regulations adopted herein will not have substantial direct effects on the states, on the relationship between the National government and the states, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this final rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

## **Conclusion**

The FAA has determined that this document involves an amendment that imposes no additional burden on any person. Accordingly, it has been determined that: 'The action does not involve a major rule under Executive Order 12291; it is not significant under DOT Regulatory Policies and Procedures

(44 FR. 11034: February 26, 1979); and because it is of editorial nature. no impact is expected(1 to result and a full regulatory evaluation is not required. In addition, the FAA certifies that this amendment will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

## **The Rule**

**In** consideration of the foregoing, the Federal Aviation Administration amends the Federal Aviation Regulations (14 CFR Chapter 1) effective October 25, 1989.

The authority citation for Part 77 is revised to read as follows:

Authority 49 U.S.C. 1304, 1348, 1354, 1421 through 1430, 1431, 1501, 49 U.S.C. 106(g) (Revised Pub. L. 97 449, January 12, 1983), (Revised Pub. L. 100-223, December 30, 1987).

# PART 77--OBJECTS AFFECTING NAVIGABLE AIRSPACE

## Subpart A--General

Source: Docket No. 1882 (30 FR 1839, 2/10/65) effective 5/1/65, for each subpart, unless otherwise noted.

### 77.1 Scope.

This part:

- (a) Establishes standards for determining obstructions in navigable airspace;
- (b) Sets forth the requirements for notice to the Administrator of certain proposed construction or alteration;
- (c) Provides for aeronautical studies of obstructions to air navigation, to determine their effect on the safe and efficient use of airspace;
- (d) Provides for public hearings on the hazardous effect of proposed construction or alteration on air navigation:  
and
- (e) Provides for establishing antenna farm areas.

### 77.2 Definition of terms.

For the purpose of this part:

*Airport available for public use* means an airport that is open to the general public with or without a prior request to use the airport.

*A seaplane base* is considered to be an airport only if its sea lanes are outlined by visual markers.

*Nonprecision instrument runway* means a runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in nonprecision instrument approach procedure has been approved, or planned, and for which no precision approach facilities are planned, or indicated on an FAA planning document or military service military airport planning document.

*Precision instrument runway* means a runway having an existing instrument approach procedure utilizing an Instrument Landing System (ILS), or a Precision Approach Radar (PAR). It also means a runway for which a precision approach system is planned and is so indicated by an FAA approved airport layout plan; a military service approved military airport layout plan; any other FAA planning document, or military service military airport planning document.

*Utility runway* means a runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less.

*Visual runway* means a runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA approved airport layout plan, a military service approved military airport layout plan, or by any planning document submitted to the FAA by competent authority.

(Amdt. 77-5, Eff. 5/2/68); (Amdt. 77-9, Eff. 5/16/71)

### **77.3 Standards.**

(a) The standards established in this part for determining obstructions to air navigation are used by the Administrator in:

- (1) Administering the Federal-aid Airport Program and the Surplus Airport Program;
- (2) Transferring property of the United States under section 16 of the Federal Airport Act;
- (3) Developing technical standards and guidance in the design and construction of airports; and
- (4) Imposing requirements for public notice of the construction or alteration of any structure where notice will promote air safety.

(b) The standards used by the Administrator in the establishment of flight procedures and aircraft operational limitations are not set forth in this part but are contained in other publications of the Administrator.

(Amdt. 77-9, Eff. 5/16/71)

### **77.5 Kinds of objects affected.**

This part applies to:

(a) Any object of natural growth, terrain, or permanent or temporary construction or alteration including equipment or materials used therein, and apparatus of a permanent or temporary character; and

(b) Alteration of any permanent or temporary existing structure by a change in its height (including appurtenances), or lateral dimensions, including equipment or materials used therein.



## **Subpart B--Notice of Construction or Alteration**

### **77.11 Scope.**

(a) This subpart requires each person proposing any kind of construction or alteration described in 77.13(a) to give adequate notice to the Administrator. It specifies the locations and dimensions of the construction or alteration for which notice is required and prescribes the form and manner of the notice. It also requires supplemental notices 48 hours before the start and upon the completion of certain construction or alteration that was the subject of a notice under 77.13(a).

(b) Notices received under this subpart provide a basis for:

- (1) Evaluating the effect of the construction or alteration on operational procedures and proposed operational procedures;
- (2) Determinations of the possible hazardous effect of the proposed construction or alteration on air navigation;
- (3) Recommendations for identifying the construction or alteration in accordance with the current Federal Aviation Administration Advisory Circular AC 70/7460 1 entitled "Obstruction Marking and Lighting," which is available without charge from the Department of Transportation, Distribution Unit, TAD 484.3, Washington, DC 20590.
- (4) Determining other appropriate measures to be applied for continued safety of air navigation; and
- 5) Charting and other notification to airmen of the construction or alteration.

(Amdt. 77-8, Eff. 2/1/69); (Amdt. 77-10, Eff. 3/ 4/72)

### **77.13 Construction or alteration requiring notice.**

a) Except as provided in 77.15, each sponsor who proposes any of the following construction or alteration shall notify the Administrator in the form and manner prescribed in 77.17:

- (1) Any construction or alteration of more than 200 feet in height above the ground level at its site.
- (2) Any construction or alteration of greater height than an imaginary surface extending outward and upward at one of the following slopes:
  - (i) 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of each airport specified in paragraph (a)(5) of this section with at least one runway more than 3,200 feet in actual length, excluding heliports.
  - (ii) 50 to 1 for a horizontal distance of 10,000 feet from the nearest point of the nearest runway of each airport specified in paragraph (a)(5) of this section with its longest runway no more than 3,200 feet in actual length, excluding heliports.
  - (iii) 25 to 1 for a horizontal distance of 5,000 feet from the nearest point of the nearest landing and takeoff area of each heliport specified in paragraph (a)(5) of this section.
- (3) Any highway, railroad, or other traverse way for mobile objects, of a height which, if adjusted upward 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance, 15 feet for any other public roadway, 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road, 23 feet for a railroad, and for a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it, would exceed a standard of paragraph (a) (1) or (2) of this section.
- (4) When requested by the FAA, any construction or alteration that would be in an instrument approach area (defined in the FAA standards governing instrument approach procedures) and available information indicates it might exceed a standard of subpart C of this part.
- (5) Any construction or alteration on any of the following airports (including heliports):
  - (i) An airport that is available for public use and is listed in the Airport Directory of the current Airman's Information Manual or in either the Alaska or Pacific Airman's Guide and Chart Supplement.

(ii) An airport under construction, that is the subject of a notice or proposal on file with the Federal Aviation Administration, and, except for military airports, it is clearly indicated that the airport will be available for public use.

(iii) An airport that is operated by an armed force of the United States.

(b) Each sponsor who proposes construction or alteration that is the subject of a notice under paragraph (a) of this section and is advised by an FAA regional office that a supplemental notice is required shall submit that notice on a prescribed form to be received by the FAA regional office at least 48 hours before the start of the construction or alteration.

(c) Each sponsor who undertakes construction or alteration that is the subject of a notice under paragraph (a) of this section shall, within S days after that construction or alteration reaches its greatest height, submit a supplemental notice on a prescribed form to the FAA regional office having jurisdiction over the region involved, if--

- (1) The construction or alteration is more than 200 feet above the surface level of its site; or
- (2) An FAA regional office advises him that submission of the form is required.

(Amdt. 77-5, Eff. 5/2/68); (Amdt. 77-9, Eff. 5/16/71); (Amdt. 77-10, Eff. 3/4/72)

### **77.15 Construction or alteration not requiring notice.**

No person is required to notify the Administrator for any of the following construction or alteration:

(a) Any object that would be shielded by existing structures of a permanent and substantial character or by natural terrain or topographic features of equal or greater height, and would be located in the congested area of a city, town, or settlement where it is evident beyond all reasonable doubt that the structure so shielded will not adversely affect safety in air navigation.

(b) Any antenna structure of 20 feet or less in height except one that would increase the height of another antenna structure.

(c) Any air navigation facility, airport visual approach or landing aid, aircraft arresting device, or meteorological device, of a type approved by the Administrator, or an appropriate military service on military airports. the location and height of which is fixed by its functional purpose.

(d) Any construction or alteration for which notice is required by any other FAA regulation.

(Amdt. 77-5, Eff. 5/2/68); (Amdt. 77-9, Eff. 5/16/71)

### **77.17 Form and time of notice.**

(a) Each person who is required to notify the Administrator under 77.13(a) shall send one executed form set (four copies) of FAA Form 7460-1, Notice of Proposed Construction or Alteration, to the Manager, Air Traffic Division, FAA Regional Office having jurisdiction over the area within which the construction or alteration will be located. Copies of FAA Form 7460-1 may be obtained from the headquarters of the Federal Aviation Administration and the regional offices.

(b) The notice required under 77.13(a) (1) through (4) must be submitted at least 30 days before the earlier of the following dates:

- (1) The date the proposed construction or alteration is to begin.
- (2) The date an application for a construction permit is to be filed.

However, a notice relating to proposed construction alteration that is subject to the licensing requirements of the Federal Communications Act may be sent to FAA at the same time the application for construction is filed with the Federal Communications Commission, or at any time before that filing.

(c) A proposed structure or an alteration to an existing structure that exceeds 2,000 feet in height above the ground will be presumed to be a hazard to air navigation and to result in an inefficient utilization of airspace and the applicant has the burden of overcoming that presumption. Each notice submitted under the pertinent provisions of this part 77 proposing a structure in excess of 2,000 feet above ground, or an alteration that will make an existing

structure exceed that height, must contain a detailed showing, directed to meeting this burden. Only in exceptional cases, where the FAA concludes that a clear and compelling showing has been made that it would not result in an inefficient utilization of the airspace and would not result in a hazard to air navigation, will a determination of no hazard be issued.

(d) In the case of an emergency involving essential public services, public health, or public safety that requires immediate construction or alteration, the 30-day requirement in paragraph (b) of this section does not apply and the notice may be sent by telephone, telegraph, or other expeditious means, with an executed FAA Form 7460-1 submitted within 5 days thereafter. Outside normal business hours, emergency notices by telephone or telegraph may be submitted to the nearest FAA Flight Service Station.

(e) Each person who is required to notify the Administrator by paragraph (b) or (c) of 77.13, or both, shall send an executed copy of FAA Form 117-1, Notice of Progress of Construction or Alteration, to the Manager, Air Traffic Division, FAA Regional Office having jurisdiction over the area involved.

(Amdt. 77-2, Eff. 7/12/66); (Amdt. 77-5, Eff. 5/2/68); (Amdt. 77-8, Eff. 2/1/69); (Amdt. 77-9, Eff. 5/16/71); (Amdt. 77-10, Eff. 3/4/72); (Amdt. 77-11, Eff. 10/25/89)

### **77.19 Acknowledgment of notice.**

(a) The FAA acknowledges in writing the receipt of each notice submitted under 77.13(a).

(b) If the construction or alteration proposed in a notice is one for which lighting or marking standards are prescribed in the FAA Advisory Circular AC 70/7460-1, entitled "Obstruction Marking and Lighting," the acknowledgment contains a statement to that effect and information on how the structure should be marked and lighted in accordance with the manual.

(c) The acknowledgment states that an aeronautical study of the proposed construction or alteration has resulted in a determination that the construction or alteration:

- (1) Would not exceed any s of subpart C and would not be a hazard to air navigation;
- (2) Would exceed a standard of subpart C but would not be a hazard to air navigation; or
- (3) Would exceed a standard of subpart C and further aeronautical study is necessary to determine whether it would be a hazard to air navigation, that the sponsor may request within 30 days that further study, and that, pending completion of any further study, it is presumed the construction or alteration would be a hazard to air navigation.

(Amdt. 77-1, Eff. 5/11/65); (Amdt. 77-4, Eff. 11/12/67); (Amdt. 77-5, Eff. 5/2/68)

## Subpart C--Obstruction Standards

### 77.21 Scope.

(a) This subpart establishes standards for determining obstructions to air navigation. It applies to existing and proposed manmade objects, objects of natural growth, and terrain. The standards apply to the use of navigable airspace by aircraft and to existing air navigation facilities, such as an air navigation aid, airport, Federal airway, instrument approach or departure procedure, or approved off-airway route. Additionally, they apply to a planned facility or use, or a change in an existing facility or use, if a proposal therefor is on file with the Federal Aviation Administration or an appropriate military service on the date the notice required by 77.13(a) is filed.

(b) At those airports having defined runways with specially prepared hard surfaces, the primary surface for each such runway extends 200 feet beyond each end of the runway. At those airports having defined strips or pathways that are used regularly for the taking off and landing of aircraft and have been designated by appropriate authority as runways, but do not have specially prepared hard surfaces, each end of the primary surface for each such runway shall coincide with the corresponding end of the runway. At those airports, excluding seaplane bases, having a defined landing and takeoff area with no defined pathways for the landing and takeoff of aircraft, a determination shall be made as to which portions of the landing and takeoff area are regularly used as landing and takeoff pathways. Those pathways so determined shall be considered runways and an appropriate primary surface as defined in 77.25(c) will be considered as being longitudinally centered on each runway so determined, and each end of that primary surface shall coincide with the corresponding end of that runway.

(c) The standards in this subpart apply to the effect of construction or alteration proposals upon an airport if, at the time of filing of the notice required by 77.13(a), that airport is --

(1) Available for public use and is listed in the Airport Directory of the current Airman's Information Manual or in either the Alaska or Pacific Airman's Guide and Chart Supplement; or

(2) A planned or proposed airport or an airport under construction, that is the subject of a notice or proposal on file with the Federal Aviation Administration, and, except for military airports, it is clearly indicated that the airport will be available for public use; or,

(3) An airport that is operated by an armed force of the United States.

(Amdt. 77-5, Eff. 5/2/68); (Amdt. 77-9, Eff. 5/16/71)

### 77.23 Standards for determining obstructions.

(a) An existing object, including a mobile object, is, and a future object would be, an obstruction to air navigation if it is of greater height than any of the following heights or surfaces:

(1) A height of 500 feet above ground level at the site of the object.

(2) A height that is 200 feet above ground level or above the established airport elevation, whichever is higher, within 3 nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual length, and that height increases in the proportion of 100 feet for each additional nautical mile of distance from the airport up to a maximum of 500 feet.

(3) A height within a terminal obstacle clearance area, including an initial approach segment, a departure area, and a circling approach area, which would result in the vertical distance between any point on the object and an established minimum instrument flight altitude within that area or segment to be less than the required obstacle clearance.

(4) A height within an en route obstacle clearance area, including turn and termination areas, of a Federal airway or approved off-airway route, that would increase the minimum obstacle clearance altitude.

(5) The surface of a takeoff and landing area of an airport or any imaginary surface established under 77.25, 77.28, or 77.29. However, no part of the take-off or landing area itself will be considered an obstruction.

(b) Except for traverse ways on or near an airport with an operative ground traffic control service, furnished by an air traffic control tower or by the airport management and coordinated with the air traffic control service, the standards of paragraph (a) of this section apply to traverse ways used or to be used for the passage of mobile objects only after the heights of these traverse ways are increased by:

(1) Seventeen feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance.

(2) Fifteen feet for any other public roadway.

(3) Ten feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road.

(4) Twenty-three feet for a railroad, and,

(5) For a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it.

(Amdt. 77-5, Eff. 5/2/68); (Amdt. 77-9, Eff. 5/16/71)

## **77.25 Civil airport imaginary surfaces.**

The following civil airport imaginary surfaces are established with relation to the airport and to each runway. The size of each such imaginary surface is based on the category of each runway according to the type of approach available or planned for that runway. The slope and dimensions of the approach surface applied to each end of a runway are determined by the most precise approach existing or planned for that runway end.

(a) Horizontal surface. A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is:

(1) 5,000 feet for all runways designated as utility or visual;

(2) 10,000 feet for all other runways. The radius of the arc specified for each end of a runway will have the same arithmetical value. That value will be the highest determined for either end of the runway. When a 5,000-foot arc is encompassed by tangents connecting two adjacent 10,000-foot arcs, the 5,000-foot arc shall be disregarded on the construction of the perimeter of the horizontal surface.

(b) Conical surface. A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

(c) Primary surface. A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; but when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width of a primary surface is:

(1) 250 feet for utility runways having only visual approaches.

(2) 500 feet for utility runways having nonprecision instrument approaches.

(3) For other than utility runways the width is:

(i) 500 feet for visual runways having only visual approaches.

(ii) 500 feet for nonprecision instrument runways having visibility minimums greater than three-fourths statute mile.

(iii) 1,000 feet for a nonprecision instrument runway having a nonprecision instrument approach with visibility minimums as low as three-fourths of a statute mile, and for precision instrument runways.

The width of the primary surface of a runway will be that width prescribed in this section for the most precise approach existing or planned for either end of that runway.

(d) Approach surface. A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end.

(1) The inner edge of the approach surface is the same width as the primary surface and it expands uniformly to a width of:

(i) 1,250 feet for that end of a utility runway with only visual approaches;

(ii) 1,500 feet for that end of a runway other than a utility runway with only visual approaches;

(iii) 2,000 feet for that end of a utility runway with a nonprecision instrument approach;

- (iv) 3,500 feet for that end of a nonprecision instrument runway other than utility, having visibility minimums greater than three-fourths of a statute mile;
  - (v) 4,000 feet for that end of a nonprecision instrument runway, other than utility, having a nonprecision instrument approach with visibility minimums as low as three-fourths statute mile; and
  - (vi) 16,000 feet for precision instrument runways.
- (2) The approach surface extends for a horizontal distance of:
- (i) 5,000 feet at a slope of 20 to 1 for all utility and visual runways;
  - (ii) 10,000 feet at a slope of 34 to 1 for all nonprecision instrument runways other than utility; and,
  - (iii) 10,000 feet at a slope of 50 to 1 with an additional 40,000 feet at a slope of 40 to 1 for all precision instrument runways.
- (3) The outer width of an approach surface to an end of a runway will be that width prescribed in this subsection for the most precise approach existing or planned for that runway end.

(e) *Transitional surface.* These surfaces extend outward and upward at right angles to the runway centerline and the runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces. Transitional surfaces for those portions of the precision approach surface which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

(Amdt. 77-7, Eff. 11/30/68); (Amdt. 77-9, Eff. 5/16/71 )

**77.27 [Reserved]** (Amdt. 77-5, Eff. 5/2/68); (Amdt. 77-7, Eff. 11/ 30/68); (Amdt. 77-9, Eff. 5/16/71)

## **77.28 Military airport imaginary surfaces.**

(a) *Related to airport reference points.* These surfaces apply to all military airports. For the purposes of this section a military airport is any airport operated by an armed force of the United States.

(1) *Inner horizontal surface.* A plane is oval in shape at a height of 150 feet above the established airfield elevation. The plane is constructed by scribing an arc with a radius of 7,500 feet about the centerline at the end of each runway and interconnecting these arcs with tangents.

(2) *Conical surface.* A surface extending from the periphery of the inner horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 7,000 feet to a height of 500 feet above the established airfield elevation.

(3) *Outer horizontal surface.* A plane, located 500 feet above the established airfield elevation, extending outward from the outer periphery of the conical surface for a horizontal distance of 30,000 feet.

(b) *Related to runways.* These surfaces apply to all military airports.

(1) *Primary surface.* A surface located on the ground or water longitudinally centered on each runway with the same length as the runway. The width of the primary surface for runways is 2,000 feet. However, at established bases where substantial construction has taken place in accordance with a previous lateral clearance criteria, the 2,000-foot width may be reduced to the former criteria.

(2) *Clear zone surface.* A surface located on the ground or water at each end of the primary surface, with a length of 1,000 feet and the same width as the primary surface.

(3) *Approach clearance surface.* An inclined plane, symmetrical about the runway centerline extended, beginning 200 feet beyond each end of the primary surface at the centerline elevation of the runway end and extending for 50,000 feet. The slope of the approach clearance surface is 50 to 1 along the runway centerline extended until it reaches an elevation of 500 feet above the established airport elevation. It then continues horizontally at this elevation to a point 50,000 feet from the point of beginning. The width of this surface at the runway end is the same as the primary surface, it flares uniformly, and the width at 50,000 is 16,000 feet.

(4) *Transitional surfaces.* These surfaces connect the primary surfaces, the first 200 feet of the clear zone surfaces, and the approach clearance surfaces to the inner horizontal surface, conical surface, outer horizontal surface or other transitional surfaces. The slope of the transitional surface is 7 to 1 outward and upward at right angles to the runway centerline.

(Amdt. 77-1, Eff. 5/11/65); (Amdt. 77-9, Eff. 5/16/71)

## **77.29 Airport imaginary surfaces for heliports.**

a) *Helicopter primary surface.* The area of the primary surface coincides in size and shape with the designated take-off and landing area of a heliport. This surface is a horizontal plane at the elevation of the established heliport elevation.

b) *Helicopter approach surface.* The approach surface begins at each end of the heliport primary surface with the same width as the primary surface, and extends outward and upward for a horizontal distance of 4,000 feet where its width is 500 feet. The slope of the approach surface is 8 to 1 for civil heliports and 10 to 1 for military heliports.

c) *Helicopter transitional surface.* These surfaces extend outward and upward from the lateral boundaries of the heliport primary surface and from the approach surfaces at a slope of 2 to 1 for a distance of 250 feet measured horizontally from the centerline of the primary and approach surfaces.

(Amdt. 77-9, Eff. 5/16/71)

## **Subpart D--Aeronautical Studies of Effect of Proposed Construction on Navigable Airspace**

### **77.31 Scope.**

(a) This subpart applies to the conduct of aeronautical studies of the effect of proposed construction or alteration on the use of air navigation facilities or navigable airspace by aircraft. In the aeronautical studies, present and future IFR and VFR aeronautical operations and procedures are reviewed and any possible changes in those operations and procedures and in the construction proposal that would eliminate or alleviate the conflicting demands are ascertained.

(b) The conclusion of a study made under this subpart is normally a determination as to whether the specific proposal studied would be a hazard to air navigation.

(Amdt. 77-6, Eff. 8/31/68)

### **77.33 Initiation of studies.**

(a) An aeronautical study is conducted by the FAA:

(1) Upon the request of the sponsor or any construction or alteration for which a notice is submitted under subpart B of this part, unless that construction or alteration would be located within an antenna farm area established under subpart F of this part; or

(2) Whenever the FAA determines it appropriate.

(Amdt. 77-4, Eff. 11/12/67)

### **77.35 Aeronautical studies.**

(a) The Regional Manager, Air Traffic Division of the region in which the proposed construction or alteration would be located, or his designee, conducts the aeronautical study of the effect of the proposal upon the operation of air navigation facilities and the safe and efficient utilization of the navigable airspace. This study may include the physical and electromagnetic radiation effect the proposal may have on the operation of an air navigation facility.

(b) To the extent considered necessary, the Regional Manager, Air Traffic Division or his designee:

(1) Solicits comments from all interested persons;

(2) Explores objections to the proposal and attempts to develop recommendations for adjustment of aviation requirements that would accommodate the proposed construction or alteration;

(3) Examines possible revisions of the proposal that would eliminate the exceeding of the standards in subpart C of this part; and

(4) Convenes a meeting with all interested persons for the purpose of gathering all facts relevant to the effect of the proposed construction or alteration on the safe and efficient utilization of the navigable airspace.

(c) The Regional Manager, Air Traffic Division or his designee issues a determination as to whether the proposed construction or alteration would be a hazard to air navigation and sends copies to all known interested persons. This determination is final unless a petition for review is granted under 77.37.

(d) If the sponsor revises his proposal to eliminate exceeding of the standards of subpart C of this part, or withdraws it, the Regional Manager, Air Traffic Division, or his designee, terminates the study and notifies all known interested persons.

(Amdt. 77-6, Eff. 8/31/68); (Amdt. 77-11, Eff. 10/25/89)

### **77.37 Discretionary review.**



(a) The sponsor of any proposed construction or alteration or any person who stated a substantial aeronautical objection to it in an aeronautical study, or any person who has a substantial aeronautical objection to it but was not given an opportunity to state it, may petition the Administrator, within 30 days after issuance of the determination under 77.19 or 77.35 or revision or extension of the determination under 77.39(c), for a review of the determination, revision, or extension. This paragraph does not apply to any acknowledgment issued under 77.19(c)(1).

(b) The petition must be in triplicate and contain a full statement of the basis upon which it is made

(c) The Administrator examines each petition and decides whether a review will be made and, if so, whether it will be:

(1) A review on the basis of written materials, including study of a report by the Regional Manager, Air Traffic Division of the aeronautical study, briefs, and related submissions by any interested party, and other relevant facts, with the Administrator affirming, revising, or reversing the determination issued under 77.19, 77.35 or 77.39(c); or

(2) A review on the basis of a public hearing, conducted in accordance with the procedures prescribed in subpart E of this part.

(Amdt. 77-3, Eff. 6/5/67); (Amdt. 77-11, Eff. 10/25/89)

### **77.39 Effective period of determination of no hazard.**

(a) Unless it is otherwise extended, revised, or terminated, each final determination of no hazard made under this subpart or subpart B or E of this part expires 18 months after its effective date, regardless of whether the proposed construction or alteration has been started, or on the date the proposed construction or alteration is abandoned, whichever is earlier.

(b) In any case, including a determination to which paragraph (d) of this section applies, where the proposed construction or alteration has not been started during the applicable period by actual structural work, such as the laying of a foundation, but not including excavation, any interested person may, at least 15 days before the date the final determination expires, petition the FAA official who issued the determination to:

(1) Revise the determination based on new facts that change the basis on which it was made; or

(2) Extend its effective period.

(c) The FAA official who issued the determination reviews each petition presented under paragraph (b) of this section, and revises, extends, or affirms the determination as indicated by his findings.

(d) In any case in which a final determination made under this subpart or subpart B or E of this part relates to proposed construction or alteration that may not be started unless the Federal Communications Commission issues an appropriate construction permit, the effective period of each final determination includes--

(1) The time required to apply to the Commission for a construction permit, but not more than 6 months after the effective date of the determination; and

(2) The time necessary for the Commission to process the application except in a case where the Administrator determines a shorter effective period is required by the circumstances.

(e) If the Commission issues a construction permit, the final determination is effective until the date prescribed for completion of the construction. If the Commission refuses to issue a construction permit, the final determination expires on the date of its refusal.

(Amdt. 77-5, Eff. 5/2/68)

## **Subpart E--Rules of Practice for Hearings Under Subpart D**

### **77.41 Scope.**

This subpart applies to (J) hearings held by the FAA under titles 1, III, and X of the Federal Aviation Act of 1958 (49 U.S.C. subchapters I, III, and X), on proposed construction or alteration that affects the use of navigable airspace.

### **77.43 Nature of hearing.**

Sections 4, 5, 7, and 8 of the Administrative Procedure Act (5 U.S.C. 1003, 1004, 1006, and 1007) do not apply to hearings held on proposed construction or alteration to determine its effect on the safety of aircraft and the efficient use of navigable airspace because those hearings are fact-finding in nature. As a fact-finding procedure, each hearing is non adversary and there are no formal pleadings or adverse parties.

### **77.45 Presiding officer.**

(a) If, under 79.37, the Administrator grants a public hearing on any proposed construction or alteration covered by this part, the Director, Air Traffic Operations Service designates an FAA employee to be the presiding officer at the hearing. (b) The presiding officer may:

- (1) Give notice of the date and location of the hearing and any prehearing conference that may be held;
- (2) Administer oaths and affirmations;
- (3) Examine witnesses;
- (4) Issue subpoenas and take depositions or have them taken;
- (5) Obtain, in the form of a public record, all pertinent and relevant facts relating to the subject matter of the hearing;
- (6) Rule, with the assistance of the legal officer, upon the admissibility of evidence;
- (7) Regulate the course and conduct of the hearing; and
- (8) Designate parties to the hearing and revoke those designations.

(Amdt. 77-11, Eff. 10/25/89)

### **77.47 Legal officer.**

The Chief Counsel designates a member of his staff to serve as legal officer at each hearing under this subpart. The legal officer may examine witnesses and assist and advise the presiding officer on questions of evidence or other legal questions arising during the hearing.

### **77.49 Notice of hearing.**

In designating a time and place for a hearing under this subpart the presiding officer considers the needs of the FAA and the convenience of the parties and witnesses. The time and place of each hearing is published in the "Notices" section of the FEDERAL REGISTER before the date of the hearing, unless the notice is impractical or unnecessary.

### **77.51 Parties to the hearing.**

The presiding officer designates the following as parties to the hearing--

- (a) The proponent of the proposed construction or alteration.
- (b) Those persons whose activities would be substantially affected by the proposed construction or alteration.

### **77.53 Prehearing conference.**

(a) The presiding officer may, in his discretion, hold a prehearing conference with the parties to the hearing and the legal officer before the hearing.

(b) At the direction of the presiding officer, each party to a prehearing conference shall submit a brief written statement of the evidence he intends to provide through his witnesses and by questioning other witnesses at the hearing, and shall provide enough copies of the statement so that the presiding officer may keep three for the FAA and give one to each other party.

(c) At the prehearing conference, the presiding officer reduces and simplifies the subject matter of the hearing so far as possible and advises the parties of the probable order of presenting the evidence.

### **77.55 Examination of witnesses.**

(a) Each witness at a hearing under this subpart shall, after being sworn by the presiding officer, give his testimony under oath.

(b) The party for whom a witness, other than an employee of the FAA, is testifying shall examine that witness. After that examination, other parties to the hearing may examine the witness, in the order fixed by the presiding officer. The presiding officer and the legal officer may then examine the witness. The presiding officer may grant any party an additional opportunity to examine any witness, if that party adequately justifies the additional examination.

(c) The legal officer examines each FAA employee who is a witness, before the other parties examine him. After that examination, the order prescribed in paragraph (b) of this section applies. An FAA employee may testify only as to facts within his personal knowledge and the application of FAA regulations, standards, and policies.

### **77.57 Evidence.**

(a) The presiding officer receives all testimony and exhibits that are relevant to the issues of the hearing. So far as possible, each party shall submit enough copies of his exhibits that the presiding officer may keep three copies for the FAA and give one to each other party.

(b) The presiding officer excludes any testimony that is irrelevant, unduly repetitious, or consists of statements made during an aeronautical study in an effort to reconcile or compromise aviation or construction or alteration requirements. A party to the hearing may object to the admission of evidence only on the ground that it is irrelevant.

### **77.59 Subpoenas of witnesses and exhibits.**

(a) The presiding officer of a hearing may issue subpoenas for any witness or exhibit that he determines may be material and relevant to the issues of the hearing. So far as possible, each party to the hearing shall provide the witnesses and exhibits that he intends to present at the hearing.

(b) If any party to the hearing is unable to provide his necessary witnesses and exhibits, he shall advise the presiding officer far enough in advance that the presiding officer can determine whether he should issue subpoenas for the desired witnesses or exhibits.

### **77.61 Revision of construction or alteration proposal.**

(a) The sponsor of any proposed construction or alteration covered by this part may revise his proposal at any time before or during the hearing. If he revises it, the presiding officer decides whether the revision affects the proposal to the extent that he should send it to the Administrator for a redetermination of the need for a hearing.

(b) If the presiding officer decides that it does not need to be resubmitted to the Administrator, he advises the parties of the revised proposal and takes the action necessary to allow all parties to effectively participate in the hearing on the revised proposal. Without limiting his discretion, the presiding officer may recess and reconvene the hearing, or hold another prehearing conference.

### **77.63 Record of hearing.**

(a) Each hearing is recorded verbatim by an official reporter under an FAA contract. The transcript, and all exhibits, become a part of the record of the hearing. (b) Any person may buy a copy of the transcript of the hearing from the reporter at the price fixed for it.

(c) The presiding officer may allow any party to withdraw an original document if he submits authenticated copies of it.

(d) Any person may buy, from the FAA, photostatic copies of any exhibit by paying the copying costs.

(e) A change in the official transcript of a hearing may be made only if it involves an error of substance. Any recommendation to correct the transcript must be filed with the presiding officer within 5 days after the hearing closes. The presiding officer reviews each request for a correction to the extent he considers appropriate and shall make any revisions that he finds appropriate as a result of that review.

### **77.65 Recommendations by parties.**

Within 20 days after the mailing of the record of hearing by the official reporter, or as otherwise directed by the presiding officer, each party may submit to the presiding officer five copies of his recommendations for a final decision to be made by the Administrator.

### **77.67 Final decision of the Administrator.**

After reviewing the evidence relevant to the questions of fact in a hearing, including the official transcript and the exhibits, The Administrator resolves all these questions, based on the weight of evidence, and makes his determination, stating the basis and reasons for it. He then issues an appropriate order to be served on each of the parties.

### **77.69 Limitations on appearance and representation.**

(a) A former officer or employee of the FAA may not appear on behalf of, or represent, any party before the FAA in connection with any matter to which this part applies, if he considered or passed on that matter while he was an officer or employee of the FAA.

(b) A person appearing before the FAA on any matter to which this part applies may not, in connection with that appearance, knowingly accept assistance from, or share fees with, any person who is prohibited by paragraph (a) of this section, from appearing himself on that matter.

(c) A former official or employee of the FAA may not, within 6 months after he ceases to be such an officer or employee, appear before the FAA on behalf of, or represent, any party in connection with any proceeding that was pending under this part while he was an officer or employee of the FAA, unless he obtains written consent from an appropriate officer of the FAA, based on a verified showing that he did not personally consider the matter concerned or gain particular knowledge of it while he was an officer or employee of the FAA.

## **Subpart F--Establishment of Antenna Farm Areas**

### **77.71 Scope.**

(a) This subpart establishes antenna farm areas in which antenna structures may be grouped to localize their effect on the use of navigable airspace.

(b) It is the policy of the FAA to encourage the use of antenna farms and the single structure multiple antenna concept for radio and television towers whenever possible. In considering proposals for establishing antenna farm areas, it considers as far as possible the revision of aeronautical procedures and operations to accommodate antenna structures that will fulfill broadcasting requirements.

### **77.73 General provisions.**

(a) An antenna farm area consists of a specified geographical location with established dimensions of area and height, where antenna towers with a common impact on aviation may be grouped. Each such area is established by appropriate rule making action.

(b) Each proposal for an antenna farm area is evaluated on the basis of its effect on the use of navigable airspace. The views of the Federal Communications Commission are requested on the effect that each establishment of an antenna farm area would have on its statutory responsibilities. Any views submitted by it are fully considered before the antenna farm concerned is established. If the Commission advises that the establishment of any proposed antenna farm area would interfere with its statutory responsibility, the proposed area is not established.

(c) The establishment of an antenna farm area is considered whenever it is proposed by:

- (1) The FAA;
- (2) The Federal Communications Commission;
- (3) The sponsor of a proposed antenna tower; or
- (4) Any other person having a substantial interest in a proposed antenna tower.

(Amdt. 77-10, Eff. 3/4/72)

### **77.75 Establishment of antenna farm areas.**

The airspace areas described in the following sections of this subpart are established as antenna farm areas.

Note: Sections 77.77 through 77.1100 reserved for descriptions of antenna farm areas.