APPENDIX D

AIRSPACE

This page intentionally left blank

Airspace Use

DEFINITION OF AIRSPACE

Airspace, or that space which lies above a nation and comes under its jurisdiction, is generally viewed as being unlimited. However, it is a finite resource that can be defined vertically and horizontally, as well as temporally, when describing its use for aviation purposes. The scheduling, or time dimension, is a very important factor in airspace management and air traffic control.

Under Public Law 85-725, the Federal Aviation Administration (FAA) is charged with the safe and efficient use of the nation's airspace and has established certain criteria and limits to its use. The method used to provide this service is the National Airspace System. This system is "… a common network of U.S. airspace; air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information and services; rules, regulations and procedures, technical information and manpower and material) (FAR/AIM, 2002).

TYPES OF AIRSPACE

There are two categories of airspace or airspace areas: (1) regulatory, consisting of controlled airspace (Class A, B, C, D, and E airspace areas in descending order of restrictive operating rules), restricted and prohibited areas; and (2) non-regulatory, consisting of military operations areas (MOAs), warning areas, alert areas, and controlled firing areas. Within these two categories, there are four types: controlled, uncontrolled, special use, and other airspace. The categories and types of airspace are dictated by: the complexity or density of aircraft movements; the nature of the operations conducted within the airspace; the level of safety required; and the national and public interest.

Controlled and Uncontrolled Airspace - Controlled and uncontrolled airspace is divided into six classes, dependent upon location, use and degree of control. Figure AS-I provides a depiction of the various classes of controlled airspace, which are briefly described below:

- Class A airspace, which is not specifically charted, is generally, that airspace from 18,000 feet mean sea level (MSL) up to and including flight level (FL) 600 (60,000 feet), including airspace overlying the waters within 12 nautical miles of the coast. Unless otherwise authorized, all aircraft must be operated under instrument flight rules (IFR) (FAR/AIM, 2002).

- Class B airspace is generally that airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of IFR operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers and is designed to contain all published instrument procedures once an aircraft enters the airspace. An air traffic control clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace (FAR/AIM, 2002).
- Class C airspace is, generally, that airspace from the surface to 4,000 feet above the airport elevation surrounding those airports that have an operational control tower, are

serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C airspace area is individually tailored, the airspace usually consists of a 5 nautical mile radius core surface area that extends from the surface up to 4,000 feet above the airport elevation, and a 10 nautical mile radius shelf area that extends from 1,200 feet to 4,000 feet above the airport elevation (FAR/AIM, 2002).

- Class D airspace is, generally, that airspace from the surface to 2,500 feet above the airport elevation surrounding those airports that have an operation control tower. The configuration of each Class D airspace area is individually tailored (FAR/AIM, 2002).

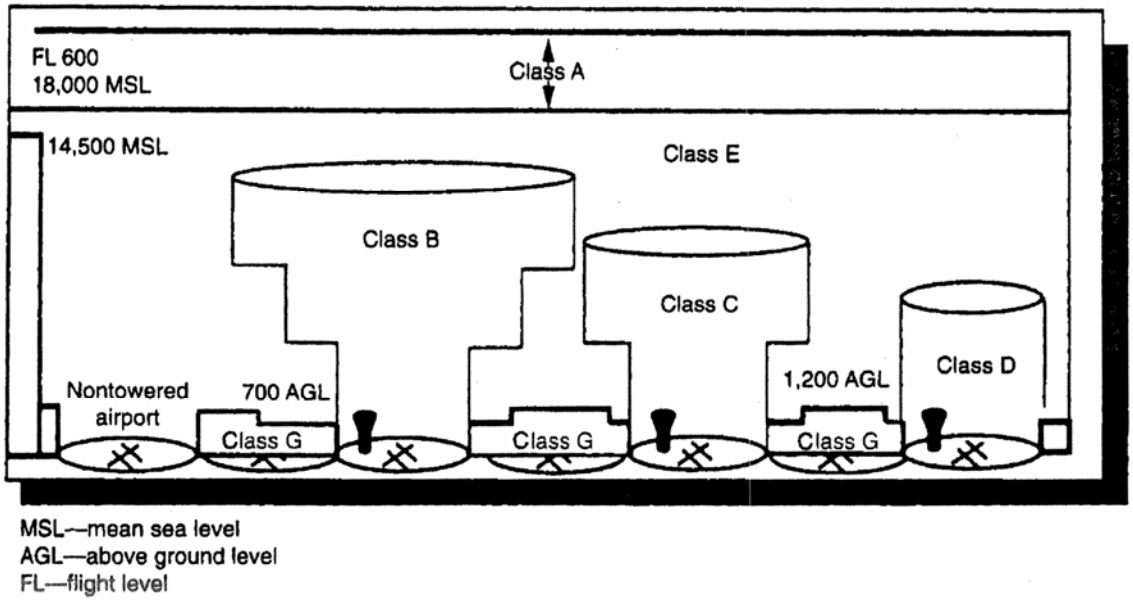
- Class E airspace, is controlled airspace that is not Class, A, Class B, Class C, or Class D airspace.

Uncontrolled airspace, or Class G airspace, has no specific definition but generally refers to airspace not otherwise designated and operations below 1,200 feet above ground level. No air traffic control service to either IFR or VFR aircraft is provided other than possible traffic advisories when the air traffic control workload permits and radio communications can be established (Illman, 1993, p. 42).

Special Use Airspace - Complementing the classes of controlled and uncontrolled airspace described above, are several types of special use airspace used by the military to meet its particular needs. Special use airspace consists of that airspace wherein activities must be confined because of their nature, or wherein limitations are imposed upon aircraft operations that are not a part of these activities, or both. Except for Controlled Firing Areas, special use airspace areas are depicted on aeronautical charts. Prohibited and Restricted Areas are regulatory special use airspace and are established in Federal Aviation Regulations (FAR) Part 73 through the rule-making process. Warning Areas, Military Operations Areas, Alert Areas, National Security Areas, and Controlled Firing Areas are non-regulatory special use airspace. Special use airspace descriptions, except National Security Areas and Controlled Firing Areas, are contained in FAA Order 7400.8. Special use airspace, except Controlled Firing Areas, are charted on IFR or Visual charts and include hours of operation, altitudes, and the controlling agency. These are described briefly below:

- Prohibited Areas contain airspace of defined dimensions identified by an area on the surface of the earth within which the flight of aircraft is prohibited. Such areas are established for security or other reasons associated with the national welfare. These areas are published in the Federal Register and are depicted on aeronautical charts. (FAR/AIM, 2002).

Figure AS-1 Types of Controlled and Uncontrolled Airspace



Source: FAR/AIM, 2002

- Restricted Areas contain airspace identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Activities within these areas must be confined, because of their nature, or limitations imposed upon aircraft operations that are not a part of these activities, or both. Restricted Areas denote the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles. Restricted Area are published in the Federal Register and constitute FAR Part 73. (FAR/AIM, 2002).

- Warning Areas are airspace that may contain hazards to non-participating aircraft in international airspace. Warning Areas are established beyond the 3-nautical mile limit, Though the activities conducted within Warning Areas may be as hazardous as those in Restricted Area, Warning Areas cannot be legally designated as Restricted Areas because they are over international waters. (FAR/AIM, 2002). By Presidential Proclamation No. 5928, the United States territorial limit was extended from 3 to 12 nautical miles in 1988 (54 FR 264, 1989). Special FAR 53 establishes certain regulatory warning areas within the new (3 to 12 nautical mile) territorial airspace to allow continuation of military activities while further regulatory requirements are determined. The current Warning Area expansion continues in effect until January 15, 1996 (FAR/AIM, 2002).

- Military Operations Areas (MOAs) consist of airspace of defined vertical and lateral limits established for the purpose of separating certain non-hazardous military training activities from IFR traffic. Whenever a MOA is being used, non-participating IFR traffic may be cleared through a MOA if IFR separation can be provided by Air Traffic Control. Otherwise, Air Traffic Control will reroute or restrict non-participating IFR (FAR/AIM, 2002).

- Alert Areas are depicted on aeronautical charts to inform non-participating pilots of areas that may contain a high volume of pilot training or an unusual type of aerial activity. All activity within an Alert Area is conducted in accordance with FAR'S, without waiver, and pilots of participating aircraft as well as pilots transiting the area are equally responsible for collision avoidance. (FAR/AIM, 2002).

- Controlled Firing Areas contain activities which, if not conducted in a controlled environment, could be hazardous to non-participating aircraft. The distinguishing feature of the Controlled Firing Area, as compared to other special use airspace, is that activities are suspended immediately when spotter aircraft, radar, or ground lookout positions indicate an aircraft might be approaching the area. They are not charted since they do not cause a non-participating aircraft to change its flight path. (FAR/AIM, 2002).

- National Security Areas consist of airspace of defined vertical and lateral dimensions established at locations where there is a requirement for increased security and safety of ground facilities. Pilots are requested to voluntarily avoid flying through the depicted National Security Area. When it is necessary to provide a greater level of security and safety, flight in National Security Areas may be temporarily prohibited by regulation under the provisions of FAR Part 99.7. (FAR/AIM, 2002).

Other Airspace Areas - Other types of airspace includes: airport advisory areas; military training routes; temporary flight restrictions areas; flight limitations/prohibitions areas; parachute jump aircraft operations areas; published VFR routes; and, terminal radar service areas *(*FAR/AIM, 2002). Of these, military training routes are described below:

- Military Training Routes (MTRs), a joint venture by the FAA and the DOD, are mutually developed for use by the military for the purpose of conducting low-altitude, high speed training. The routes above 457 m (1,500 ft) above ground level, identified by three number characters (e.g., IR-206, VR-207), are developed to be flown, to the maximum extent possible, under instrument flight rules. The routes at 457 m (1,500 ft) above ground level and below, identified by four number characters (e.g., IR-1206, VR-1207), are generally developed to be flown under visual flight rules. Generally, military training routes are established below 3,048 m (1 0,000 ft) mean sea level for operations at speeds in excess of 250 knots. However, route segments may be defined at higher altitudes for purposes of route continuity (Aeronautical Information Manual, 2000). Route width is normally 9 km (5 nm) either side of centerline. In addition to the instrument and visual flight rules routes, there are slow speed low altitude routes used for military air operations at or below 457 m (1,500 ft) at airspeeds of 250 knots or less (National Imagery and Mapping Agency, 2001).