Appendix A
FAA Regulations

A.1 A Brief History of Federal Agencies Regulating Aviation

The Federal Aviation Administration (FAA) has had its present name and place in the Federal establishment since April 1, 1967, the day the Department of Transportation (DOT) began operations. It has existed, however, in recognizably similar forms since 1926 when Congress enacted the Air Commerce Act, establishing an Aeronautics Branch within the Department of Commerce. Passed at the request of the aviation industry, which believed the airplane could not reach its full commercial potential without Federal safety regulation, the act charged the Secretary of Commerce with fostering air commerce, issuing and enforcing air traffic rules, licensing pilots, certificating aircraft, establishing airways, and operating and maintaining aids to air navigation.

Over the next decade, the Department of Commerce fulfilled its civil aviation responsibilities by concentrating on airway development, safety rulemaking, and pilot and aircraft certification. In 1936 a major shift occurred: Commerce assumed responsibility for controlling enroute air traffic. Air traffic control (ATC) eventually became, in terms of manpower and facilities employed, the Federal Government's most demanding civil aviation responsibility.

In 1938, with the enactment of the Civil Aeronautics Act, the Federal civil aviation role passed from Commerce to a new independent agency, the Civil Aeronautics Authority. That legislation expanded the Federal civil aviation role by giving the Authority the power to issue air carrier route certificates and regulate airline fares. In 1940, President Franklin Roosevelt split the Authority into two agencies, the Civil Aeronautics Board (CAB) and the Civil Aeronautics Administration (CAA). The CAA, lodged in the Department of Commerce, was responsible for ATC, airman and aircraft certification, safety enforcement, and airways development. In 1946, Congress added to these responsibilities a Federal aid airport program.

The Federal Aviation Act of 1958, whose passage had been spurred by a series of midair collisions, transferred the CAA's functions to a new independent body, the Federal Aviation Agency. This act was significant in two other respects. It took safety rulemaking from the CAB and entrusted it to the Federal Aviation Agency. More importantly, it gave the Federal Aviation Agency the sole responsibility for developing and maintaining a common civil-military system of air navigation and ATC, a responsibility that the CAA had shared with others.

In 1967, the Federal Aviation Agency was renamed the Federal Aviation Administration and placed in the newly created DOT. The creation of the DOT reflected a growing awareness in Congress, the executive branch, and the transportation industry that integrated and balanced transportation systems were required to meet the nation's transportation needs and that such systems could best be achieved by a single department.

Meanwhile, the FAA was assuming responsibilities not originally contemplated by the Federal Aviation Act. In 1968, Congress vested in the FAA Administrator the power to prescribe aircraft noise standards. The hijacking epidemic of the 1960s also involved the agency in a new area, aviation security. Finally, in 1970, the Airport and Airway Development Act authorized the FAA Administrator to establish minimum safety standards for airports and issue operating certificates to air carrier airports meeting those standards.

In the 1970s, the FAA and other Federal employees joined the ranks of organized labor. The Federal union movement began in 1962 when President John F. Kennedy granted by executive order the right of Federal employees to join unions and engage in collective bargaining. In 1968, a group of New York-based controllers formed the Professional Air Traffic Controllers Organization (PATCO), a professional society that eventually became a labor union. FAA-PATCO relations fell into three distinct periods: the early, strife-marked period that culminated in a 1970 "sickout" in which 3,000 controllers participated; a period of relative labor peace that saw controllers gain valuable wage and retirement benefits; and another period of strife, beginning in 1980, that led to 12,300 PATCO members going on strike in August 1981, the firing of the strikers, and the decertification of PATCO. Despite the loss of most of its controller workforce, the FAA kept the airways open and brought the ATC system close to its 1981 capacity within 2 years.

Airspace system capacity, however, was a long-term problem. Congress had created the FAA to meet the airspace challenges of the jet age. A large part of the FAA's response was the third-generation ATC system, a semiautomated radar- and computer-based system. That system was capitalized by user taxes from a trust fund created by the Airport and Airway Revenue Act of 1970. Despite the steady infusion of trust fund capital, the third-generation ATC system showed signs of wear by the early 1980s. Air traffic had surged dramatically, testing the limits of the system's capacity.

Traffic growth had been fed in part by the competitive environment created by the Airline Deregulation Act of 1978, which introduced fare and route competition in the air passenger industry and permitted unrestricted entry by new domestic carriers. Accordingly, in December 1981, the FAA unveiled the National Airspace System Plan, a blueprint for a state-of-the-art traffic control and air navigation system to accommodate projected growth in air travel over the next 20 years.

A.2 Organization of the FAA

The FAA is currently part of the DOT and is under the leadership of an Administrator who reports to the Secretary of Transportation.

The organizational structure of the FAA has undergone numerous changes over the years. Regardless of changes at the top levels of FAA headquarters and field offices, the "firing line" levels at or near the bottom, where the ultimate action takes place, have usually been relatively unaffected. Future reorganizations most likely will have little, if any, effect on day-to-day work functions of the local FAA offices. This famliarization with the FAA organization will, therefore, be based upon that assumption.

A.2.1 Headquarters

The top levels at FAA headquarters for design certification, production certification, and airworthiness certification begin with the Executive Director of Regulatory Standards and Compliance, under whom is the Associate Administrator for Regulation and Certification. Among the offices under the Associate Administrator is the Aircraft Certification Service, which has the responsibility for overseeing the Aircraft Certification Directorates, and the Washington Headquarters operations related to design, production, and airworthiness certification. The Aircraft Manufacturing Division of the Aircraft Certification Service has total responsibility for national policy and regulations governing production of aircraft and replacement parts (quality assurance) and the requirements for issuance of airworthiness certificates and export approvals. The engineering functions for aircraft and engine design certification policy and regulations are divided among four field offices, called Directorates. The Aircraft Engineering Division of the Aircraft Certification Service is responsible for national policy that affects all four of the Directorates and for policy and regulations for unique aircraft not otherwise covered by an aircraft category.

A.2.2 Directorates/Aircraft Certification Division

The headquarters of the Aircraft Certification Directorates/Divisions (ACDs) and the categories for which they are responsible are as follows:

a. For transport category airplanes (Federal Aviation Regulation [FAR] Part 25), the Directorate headquarters is in Seattle, Washington.

b. For small airplanes (FAR Part 23), the Directorate headquarters is in Kansas City, Missouri.

c. For rotorcraft of all categories (FAR Parts 27 and 29), the Directorate headquarters is in Fort Worth, Texas.

d. For engines and propellers (FAR Part 33 and 35), the Directorate headquarters is in Boston, Massachusetts.

The ACD is also responsible for implementing certification programs (type, production, and airworthiness) within the geographic boundaries of the Directorate, subject to the policy guidance of the ACD in the Directorate responsible for the product involved. For example, the transport category Directorate is responsible for accomplish-

ing all of the work required for type certification of an engine whose manufacture is located in Seattle, but the engine/propeller Directorate headquartered in Boston is responsible for policy guidance and regulatory interpretations, if required.

Each Directorate/Division is responsible for development, coordination, and issuance of documents related to the assigned category, including

a. Airworthiness Directives (ADs)
b. Regulatory Changes
c. New Regulations
d. Advisory Circulars (ACs)
e. FAA Internal Directives (Orders, Notices, etc.)

NOTE: The authority outlined above does not include changes to procedural regulations, such as FAR Part 21, that would affect all Directorates. Such changes are the responsibility of the Engineering Division in FAA Washington Headquarters.

A.2.3 Directorates/Aircraft Certification Offices

The day-to-day work functions within the geographic area for which each Directorate is responsible are carried out by Aircraft Certification Offices (ACOs), whose managers report to the Directorate Aircraft Certification Division. ACOs consist of branches and sections covering the various engineering specialities related to design certification of aircraft, aircraft engines, propellers, and replacement parts for those products. ACO design certification programs encompass all categories of products whose manufacturers are located within the ACO geographic area of responsibility. Policy guidance for ACO design approval projects is provided by the Inspection Branch responsible for monitoring the manufacturing (quality assurance) and airworthiness certification programs with policy guidance from the Manufacturing Division at FAA headquarters.

A.2.4 Directorates/Manufacturing Inspection District Offices

The managers of the Manufacturing Inspection District Offices (MIDOs) report to the manager of the ACO, except for technical policy guidance when reporting may be to the Aircraft Certification Division at the option of the ACO manager. The MIDO's primary functions are not related to any specific product category, as in engineering, since such functions are generally similar regardless of the type of product involved. The MIDO responsibilities include

a. Evaluation of production quality assurance systems for compliance with the FAR, leading to issuance of production approvals.

b. Surveillance of approved production facilities.

c. Providing support to FAA engineering in design approval programs through conformity inspections of prototype/first article products and witnessing tests as requested by engineering.

d. Issuance of airworthiness certificates for new aircraft.

e. Issuance of export approvals for new aircraft, aircraft engines, propellers, or their major components.

f. Enforcement of the FAR applicable to production approvals.

The MIDO manager may assign Principal Inspectors (PIs) for major production approval holders. The PI is responsible for oversight of his or her assigned manufacturer, and for ensuring the timely accomplishment of the MIDO functions that apply.

A.2.5 The FAA William J. Hughes Technical Center

The FAA William J. Hughes Technical Center is located at the Atlantic City International Airport in New Jersey. It serves as the national test center for FAA research and development programs in air traffic control, communications, navigation, airports, and aircraft safety. Work involves the long-range development of new systems and concepts, development of new equipment and techniques to be placed in service in the near future, and in-service modifications to existing systems and procedures.

Most of the ongoing technical projects are assigned by FAA headquarters. Some testing takes place at other locations where the environment is more suitable, and some work is contracted to private industry and universities.

Center test pilots operate a fleet of specially instrumented aircraft that range in size from small airplanes to helicopters and large transports.

Major test facilities include

- Air Traffic Simulation Facility
- Air Traffic Laboratories
- Radar Test Laboratories
- Navigation Facilities
- Tracking Range
- Aircraft Safety Area

The Aircraft Safety Area contains special facilities for fire and accident tests on aircraft, components, and engines. They include a catapult, wind tunnel, chemistry laboratory, engine test cells, and a full-scale fire test facility, the largest of its kind in the world.

A.2.6 Civil Aeromedical Institute

The Civil Aeromedical Institute (CAMI) is located at the Mike Monroney Aeronautical Center at the Oklahoma City Airport in Oklahoma. It conducts medical research projects applicable to the mission of the FAA. The CAMI develops, maintains, and manages a system for the medical examination and certification of U.S. civil airmen and develops, maintains, and administers aviation medical education programs to meet the needs of the FAA. It also participates in the investigation of aircraft accidents regarding survivability factors and biomedical and psychological causes of accidents, such as disease and substance abuse.

A.3 Enabling Legislation and Procedures for the FAA

The top level public law that governs the activities of the FAA is the Federal Aviation Act of 1958, as amended. All FAA operating procedures must be in accordance with the Federal Aviation Act. The Act may be amended by Congress, however, if a compelling need for such an amendment exists.

Most of the FAA operations are covered under Title VI, “Safety Regulation of Civil Aeronautics.” Section 601 of this Title gives the FAA Administrator the power and duty to prescribe and revise minimum standards and rules and regulations governing, among other things, “the design, material, workmanship, construction, and performance of aircraft, aircraft engines, and propellers as may be required in the interest of safety.” Therein lies the basis for the FARs.

A.3.1 Federal Aviation Regulations

FARs are issued by the FAA to implement the provisions of the Federal Aviation Act, which gives only the basic objectives with little detail. Compliance with the FARs is mandatory to obtain the kind of certificates or approvals to which the particular FAR applies. Once a certificate or approval is issued for a purpose that requires ongoing compliance, such as a Production Certificate, noncompliance with or violation of the terms of, the approval would

result in civil penalty or administrative enforcement action, or if the infraction is of a serious nature, the certificate or approval could be suspended or revoked.

A.3.1.1 Petitions for Rulemaking

The procedures to be followed in presenting Petitions for Rulemaking are detailed in FAR Part 11. The basic requirements that must be met in a petition are that the petition must explain the interests of the petitioner in the action sought, and contain information, views, or arguments as to why granting the request would be in the public interest.

If the FAA determines that the basic requirements for a petition have been met, a summary of the petition is published in the Federal Register and public comments are invited. To be considered, comments must be submitted to the FAA within a time period specified in the published summary (usually 60 days). If the FAA finds that the petition is not acceptable after considering the public comments, it is returned to the petitioner, who may then resubmit the petition with additional information. If, however, the FAA determines, after consideration of its own analysis of the petition and of all public comments received in response to the summary, that the petition has merit, the FAA institutes rulemaking procedures.

A.3.1.1.2 Notices of Proposed Rulemaking

When the FAA initiates rulemaking, a part of the rulemaking action is publication of the proposed new or amended regulation in the Federal Register as a Notice of Proposed Rulemaking (NPRM), with public comments invited. To be considered, comments must be submitted to the FAA within a time period specified in the published NPRM. Each comment received must be analyzed by the FAA and may be either accepted or rejected, depending on whether the commenter has provided justification and substantiation of his/her views. Comments that state simply "for" or "against" without support information are generally not given consideration. The substance of comments that are accepted would be incorporated into the proposed regulation.

After all actions related to the NPRM and comments received are completed, and the proposed rule has completed the interagency coordination process, the final rule may be approved by the FAA Administrator or his or her designee.

Because of the extensive coordination required for rulemaking actions, including the DOT and the Office of Management and Budget, the time elapsed between initiation of the action and adoption of the final rule may be a year or more, depending on whether the proposed rule is imposing or relieving a burden to the public and whether the proposal is controversial in nature. The only exception to the long time element is in the case of ADs, which may be processed quickly under emergency procedures.

A.3.1.2 Exemptions from FARS

Anyone may petition the FAA for an exemption from a regulation following procedures set forth in FAR Part 11, which are similar to those for petition for rulemaking. The primary difference between a petition for exemption and a petition for rulemaking is that the petitioner for an exemption must include reasons why safety would not be adversely affected if the exemption is granted or must explain the action to be taken by the petitioner to provide a level of safety equal to that provided by the rule from which the exemption is sought.

The processing of a petition for exemption is also similar to that for a petition for rulemaking, except that full interagency coordination is generally not necessary or accomplished more quickly. The final action on a petition for exemption may usually be determined within 60 to 90 days or, if the petitioner shows good cause, sooner.

The final action on a petition for an exemption may be either a grant if the petitioner has shown good cause or a denial if he/she has not. In the case of a denial, the petition may be resubmitted if the petitioner has new information that would provide better substantiation.

The scope of exemptions varies considerably—an exemption may be valid only for one person on a short-term basis or may apply to an organization or a group and be effective for several years. Exemptions are not normally granted on a permanent basis, but in cases where the need is ongoing for many years, the original petitioner may request renewal when the exemption expires, provided the need for the renewal is adequately substantiated.

An exception to the usual requirement that exemptions expire on a given date unless renewed is the case of an exemption granted from a regulation in the airworthiness standards of FAR Parts 23 and 25. Such exemptions may be permanent, and since they constitute a deviation from published airworthiness standards, they must be listed on the Standard Airworthiness Certificates issued for the aircraft affected by the exemption to satisfy the requirements of the International Civil Aviation Organization (ICAO).

A.3.2 Airworthiness Directives (ADs)

ADs are issued by the FAA when an unsafe condition exists in a product, and that condition is likely to exist in other products of the same type design. The need for an AD may be identified as a result of an accident, maintenance problems, routine inspections, etc. The primary criteria upon which the FAA bases decisions for AD action are that an unsafe condition was found and that the same condition is likely to exist in other aircraft.

The corrective action prescribed by the AD, such as an inspection, a repair, or a modification, may be detailed in the AD itself or may be contained in another document, such as a manufacturer's Service Bulletin, which is referenced in the AD.

ADs have the same authority as a FAR and, as such, compliance with ADs is mandatory. Noncompliance with an AD that, for example, applies to an aircraft would be in violation of the terms of issuance of the airworthiness certificate, resulting in its invalidation—in effect, grounding the aircraft. The same effect would result if an engine, propeller, or appliance with an unincorporated AD was installed on an aircraft.

The procedures for processing ADs generally follow those previously discussed under the development of FARs, beginning with publication of the draft AD in the Federal Register as an NPRM, with public comments invited, except when the situation requires urgent action to preserve safety, an emergency AD may be issued immediately without the full rulemaking process.

The FAA Directorate for the product involved, usually in conjunction with the local ACO, is responsible for drafting the AD and coordinating the rulemaking process. The text of the AD and the corrective action is usually a joint effort between the manufacturer and FAA engineering. Input and comments are also considered from other segments of the FAA and from individuals or organizations representing aircraft operators.

A.3.3 Technical Standard Orders

Under the Civil Aeronautics Act of 1938, the Administrator of Civil Aeronautics was authorized to adopt the Technical Standard Order (TSO) system to establish minimum performance standards and specifications of aircraft materials, parts, processes, and appliances that are used on civil aircraft.

TSOs are covered in FAR Part 21, "Certification Procedures for Products and Parts," as Subpart O, "Technical Standard Order Authorizations." The TSO requirements cover most, but not necessarily all, of the requirements on that item in the FARs.

A TSO Authorization is an FAA design and production approval issued to the manufacturer of an article that has been found to meet a specific TSO.

A Letter of TSO Design Approval is an FAA design approval for a foreign-manufactured article, which has been found to meet a specific TSO in accordance with specified procedures.

A.3.4 Congressional Actions

In a number of cases involving controversial issues, Congress passed amendments to the Act that mandates FAA action, even though the Act may already provide for such action. Notable examples of this are all sections in Title VI, amended to require Emergency Locator Transmitters in certain aircraft, to establish Noise Abatement requirements, and most recently, to establish requirements for Mode C transponders in aircraft operating in controlled airspace.

A.3.5 Directives that Implement FARs

Directives that implement FARs are issued to provide guidance or an acceptable means of compliance with specific FARs. Such directives are not normally mandatory on an applicant for an FAA certificate or approval. If compliance with their provisions would result in a burden on, or adversely affect a segment of the aviation community, a draft must be published in the Federal Register for public review and comment, which must be considered before the directive can be issued. This requirement applies to all directives issued by any U.S. Government agency, including those whose purpose is to govern internal operations but, in so doing, may have an adverse effect on the public.

A.3.5.1 Advisory Circulars (ACs)

The FAA issues ACs to inform the aviation public in a systematic way of nonregulatory material of interest. Unless incorporated into a regulation by reference, the contents of an AC are not binding on the public. Among other things, ACs are used to show a method acceptable to the FAA, but which may not be the only method, for complying with a related FAR.

ACs are available to the public through several means. Some are free, depending on content and number of pages, and may be obtained from the DOT, Washington, D.C., or from Government Printing Office bookstores located in many major cities. Anyone may also ask to see ACs at any ACD, ACO, or MIDO.

ACs are developed by the FAA office having primary responsibility for the subject of the AC. For example, ACs concerning FAR Part 25 Airworthiness Standards for transport category aircraft are developed by the Transport Airplane Directorate. ACs that are to provide information or guidance concerning FAR Part 21, which applies to all Directorates, would most likely be developed by FAA headquarters.

The approval process for ACs varies, depending on the subject matter. An AC that only provides information of interest to the public, or a service or guidance of a helpful nature, may be coordinated within the FAA and issued without publication in the Federal Register. On the other hand, an AC that announces policy on a controversial subject, or provides an acceptable means of compliance with a FAR, would normally be published in the Federal Register for public comment before the AC is issued.

A.3.5.2 Internal Directives

Internal directives govern the internal operations of the FAA and generally are for use by FAA personnel only. Some provide guidance and instructions to field office personnel for functions that may affect the public, in which case someone affected by the directive may ask to see it or may obtain a copy. Under normal conditions, however, guidance that impacts the public is issued as an AC. Some internal directives may contain classified information that is not available to the public.

A.3.5.2.1 Orders

Orders are the highest level of internal directives, covering a wide range of subjects from establishing the functions and responsibilities of all FAA offices—both headquarters and field—to providing permanent guidance and instruction to field offices and FAA personnel. Orders are normally developed and coordinated within the FAA and are not released for public comment prior to publication.

Orders that do not contain classified information may be made available to the public, particularly those governing the activities of the field offices.

Orders may be single page documents or complete texts of instruction material, issued as "handbooks." Examples of FAA Orders are the Designated Engineering Representative (DER) Handbook (Order 8110.37) and the Type Certification Handbook (Order 8110.4). The Order number is in accordance with the FAA subject classification system—8110 is Engineering—and all forms of reports related to the subject also have the same number, e.g., the DER Certificate of Authority, FAA Form 8110-25, and the Statement of Compliance, FAA Form 8110-3.

A.3.5.2.2 Notices

Notices have the same authority within the FAA as Orders; however, Notices are temporary, usually expiring in less than 1 year. The processing of a Notice may generally be completed more quickly than an Order, but if the material in the Notice is to be effective for more than 1 year, it must be reprocessed as an Order prior to the expiration of the Notice.

Notices may be used to transmit other official data, provide information or guidance intended for "one-time-only" use, or provide instructions of an "emergency" nature to field offices. Such "emergency" Notices may be issued as telegrams called GENOTs (General Notices).

A.3.5.2.3 Memorandums

Memorandums are sometimes used to provide guidance or interpretations when the "audience" is very limited—such as to one field office. Memorandums are also issued by the FAA General Counsel to provide legal interpretations of FARs in controversial cases and are official policy documents. Regardless of the purpose of Memorandums, if the information concerns FAA policy that should be distributed agency-wide, the Memorandum is eventually issued as an AC, Order, or incorporated into existing ACs or internal directives.

A.4 Documentary Sources for Flammability Requirements

Documentation specifying flammability requirements and test procedures fall primarily in Civil Air Regulation (CAR) Parts, FAR Parts, TSOs, and ACs.

A.4.1 Civil Air Regulations Parts

CARs that relate to certification flammability requirements and fire testing are—

CAR Part 3	Airplane Airworthiness; Normal Utility and Acrobatic Airplanes
CAR Part 4b	Airplane Airworthiness; Transport Category
CAR Part 6	Rotorcraft Airworthiness; Normal Category
CAR Part 7	Rotorcraft Airworthiness; Transport Category

These CAR Parts will still be addressed because the current fleet contains models that were certified to CARs (e.g., the Boeing 707 and 727-100, the Douglas DC- series through the DC-9, and the Lockheed Electra).

Approved test methods to be used in demonstrating compliance with these CAR requirements were published in Safety Regulation Release (SRR) No. 259 in 1947. Flight Standards Service Release (FSSR) No. 453 superseded SRR No. 259 in 1961, pending incorporation of appropriate test procedures in Civil Aeronautics Manuals.

The SRR and FSSR contained a fireproof test, two different types of fire-resistant tests, and flame-resistant and flash-resistant tests, both of which involved a Bunsen burner and a horizontal test specimen.

Although the FSSR was canceled by AC 00-20 on September 7, 1966, it was never completely replaced by an AC. It is still used for CAR certified airplanes.

A.4.2 FAR Parts

The CARs were reorganized and reissued without additional requirements as FARs in 1965, when the Civil Aeronautics Agency was made a part of the DOT as the FAA. FARs that relate to certification flammability requirements and fire testing are:

FAR Part 1	Definitions
FAR Part 21	Certification Procedures for Products and Parts
FAR Part 23	Airworthiness Standards: Normal Utility and Acrobatic Category Airplanes
FAR Part 25	Airworthiness Standards: Transport Category Airplanes
FAR Part 27	Airworthiness Standards: Normal Category Rotorcraft
FAR Part 29	Airworthiness Standards: Transport Category Rotorcraft
FAR Part 33	Airworthiness Standards: Aircraft Engines
FAR Part 37	Technical Standard Order Authorizations
FAR Part 91	General Operating and Flight Rules
FAR Part 121	Certification and Operations: Domestic, Flag, and Su