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Airworthiness Management of Light Sport Aircraft (LSA) In the Situation of Opening Low-Altitude Airspace

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Abstract

General aviation industry plays a decisive role in the national economy , “Gradually open up the low-altitude airspace” policy has in fact started providing space for the growth of general aviation , especially for the need of Light Sport Aircraft (LSA). This paper Summary LSA management experience of the United States, through the analysis of management situation of China, gave the LSA operation airworthiness management proposals in the situation of opening low-altitude airspace.

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Keywords: Light sport aircraft(ALS), open up the low-altitude airspace, General aviation, Airworthiness Management;

1. Introduction

General aviation industry plays a decisive role in the national economy, general aviation, an important component of civil aviation, and public air transportation just like wings of one bird. The State Council and Central Military Commission recently issued "Advise on Deepening reforming management of low-altitude airspace", which means the starting of official and institutional change in China's aviation industry. “Gradually open up the low-altitude airspace” policy has in fact started providing space for the growth of general aviation. The next 10 years, general aviation industry will come to its era, an era of prosperity and great development. Pent-up need for general aviation will rocket to the sky, especially for the need of Light Sport Aircraft (LSA).

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How to deal with the problem of operation safety brought by rapid growth of low altitude air transportation, has been a challenge of current management system, especially the operation safety of Light Sport Aircraft (LSA). In Our country general aviation management system is imperfect, which restricted development of LSA, and development of general aviation.

2. Learns of LSA airworthiness management in America

United States is the general aviation developed countries, and its industry trend is representative and pilot. U.S. has put the development of general aviation as an important part of 21st air highway system, which come a new transportation development strategy. National laws and regulations play a decisive role in promoting the development of general aviation. Federal Aviation Administration (FAA) developed all rules and regulations - Federal Aviation Regulations (FAR) for safety driving, possession and general aviation aircraft manufacture of. U.S. FAA (Federal Aviation Administration) set up a series of regulations and regulatory agencies for LSA.

2.1 LSA airworthiness regulation system of U.S.

Put under the FAR, current general aviation regulation system has been consummated, covered general aviation operation, maintenance, ombudsman certification, and all kinds general aviation operation, maintenance, training school certifications. Besides, lot of regulation files regulates ombudsman to fulfill his duty. Regulations of LSA has been consummate, which include FAR part 21, 65, 61, 91 and so on. LSA regulation system has two levels, one is law level, the other is regulation level.

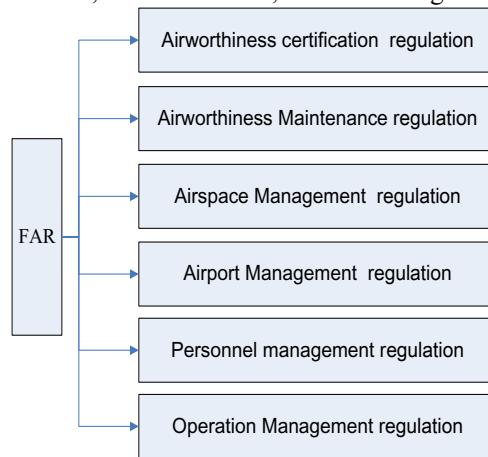


Fig. 1 LSA airworthiness regulation system of U.S.

(1)FAR

In 1958 the United States issued the "Federal Aviation Regulation", which established the Federal Aviation Agency (FAA), whose main responsibility is to get rid of the danger of air transport. FAR, to the law level, confirmed that the development focus of civil aviation had been safety; air force and civil aviation should cooperate to make use of air space; civilian transport freedom; put safety business travel under government responsibility.

(2)Airworthiness certification regulation

FAR added part 21 sentence 190 "Issue of a Special Airworthiness Certificate for Light-Sport Category". FAA accepted American Society for Testing and Materials Standards Institute (ASTM)

standards, widely accepted by global industry, as LSA design, manufacture, operate, airworthy, and maintenance standard, and distribute airworthiness certification for light air craft.

(3) Airworthiness Maintenance regulation

FAR added part 65 sentence 107” Repairman certificate (light-sport aircraft”, aimed at LSA maintenance person qualification level certification. Those who gained certification can maintain on LSA air craft, which including 100-hours check, annual check, parts installation according to FAR, and execution of ACs, from original manufacture, authority to maintenance despatcher.

(4) Airspace Management regulation

FAR part 71 ”designation of class a, class b, class c, class d, and class e airspace areas; airways; routes; and reporting points”,has introduced global agreed air space management system, named A, B, C, D, E and G level of airspace.

(5) Airport Management regulation

FAR part 139 is the only airport operation certification regulation, implemented by FAA. Citizens in U.S. has freedom to use any civil aviation airport, and on the principle of first come first served. Number of registered airports is more than 19990, besides 500 airports only used for cargo flight, more than 4853 airports of different scale opening to general air transport, including 120 private airports. Thus, 14637 private airports are not available to the public.

(6) Personnel management regulation

FAA amended FAR part 61 for LSA pilots. Sport pilot license was added. FAA amended FAR part 61 sentence 1 did define the time and period of sport pilot transition; sentence 3 did define the body standard of sport pilot transition; sentence 89 defined restriction of single fight by student sport pilot.

(7) Operation Management regulation

Sports driver basically follow the relevant provisions of FAR PART 91. FAR61, section 131 provides the special requirements of sports driver run in Class B airspace; FAR61, section 327 Provides operating restrictions of the airworthiness certificated LSA category aircraft. The U.S. government agreed to LSA users and producers to register low-cost online registration.

2.2 LSA agencies and staffing in U.S.

In addition to headquarters, the Federal Aviation Administration in the country with nine Regional Authority, The country, with 108 offices and 13 field offices Certification. 8 Regional Authority which has flight standards department. Headquarters is responsible for regulatory standards, the Office of Regional Administration and site is responsible for supervision and inspection, Including both general aviation and civil aviation. FAA has established a special LSA Office, monitoring movement LSA driver examiner and training maintenance personnel, and provide sport pilot and LSA maintenance personnel safety education.

U.S. government and the associations formed Light Sport–Joint Safety Committee (LS - JSC), which is under the General Aviation Joint Steering Committee (GA -JSSG) mainly through the following activities to promote the safe operation of LSA:promote the validation policy, Ongoing security monitoring

Involved in accident investigation, proposed FAA and industry education programs,proposed Industry consensus standards,Proposed methods and procedures for flight training, Data collection and analysis and so on. Core members include FAA, LAMA(Light Aircraft Manufacturers Association), NAFI(National Association of Flight Instructors), AOPA(Aircraft Owners and Pilots Association), EAA(Experimental Aircraft Association), ASTM(American Society for Testing and Materials), F.I.T.(Florida Institute of Technology).

3. Analysis of LSA airworthiness management in China

In China, in a very long time, General aviation has not been given sufficient attention and development. In 1986, the State Council issued the "State Council on the Provisional Regulations on Management of General Aviation". May 1, 2003 the State Council and Central Military Commission jointly promulgated the "General Aviation Flight Control Ordinance ".However, for a long time, the development of general aviation has been at a low level, which is far behind the development of civil aviation. Uneven pattern of development, leading to the Civil Aviation irrational industrial structure and fleet structure is irrational.

3.1 LSA airworthiness regulation system of China

In China, LSA run by Civil Aviation Administration of China and Sports Commission.

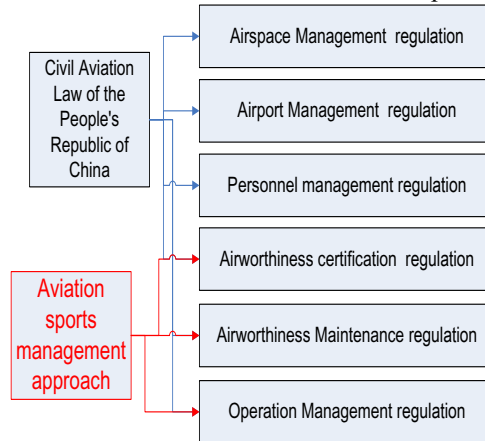


Fig. 2 LSA airworthiness regulation system of China.

(1) Civil Aviation Law of the People's Republic of China

“Civil Aviation Law of the People's Republic of China” declared: "In order to safeguard national sovereignty and civil aviation airspace rights and protected of civil aviation activities in a safe and orderly manner, the competent civil aviation authority under the state council to the national civil aviation activities for the unified supervision and management “.

“Aviation sports management approach” declared: "National sports committee unified management the national air sports."

Thus, LSA run by Civil Aviation Administration of China and Sports Commission, this cause many difficulties for the operation of LSA.

(2) Airworthiness certification regulation

CCAR-21-R3 said, "civil aviation products and parts certification requirement "

CCAR21,AC-21-AA-2009-25 said, "Light Sport Aircraft Airworthiness Management Policy Guide"

From the two regulation we can see that certification entry are not provided for LSA. And there are absence of the provisions of delta wing and powered parachute in the validation of LSA.

(3) Airworthiness Maintenance regulation

"Civil aircraft maintenance personnel licensing rules" section 66.46 "Sport aircraft maintenance personnel qualification documents, " declared: "LSA maintenance personnel, in accordance with the regulations of the State Sports General Administration of Sport Aviation Airworthiness proxy group get LSA maintenance personnel qualification documents. "

"Sport Aviation Regulations, " provides that "the State Sports Committee is responsible for all aviation sports training program, training rules, competition rules and air movement equipment maintenance requirements. "

Thus, LSA run by Civil Aviation Administration of China and Sports Commission, we just feel confuse and don't know who manages the maintenance.

(4) Airspace Management regulation

China's airspace system is not classified in accordance with ICAO standards, but take the needs of a single management approach fuzzy. In management, requires that all flights must be pre-application for approval before implementation. In services, provide interval service, information service and alerting service. There is no difference in the implementation of various types of civil flight management, providing the same tasks approved method, planning management method and control command approach.

This means adequate airspace management and services is enough to adapt to the characteristics of transport aviation. But with the rapid development of general aviation, the current management model increasingly difficult to meet their development needs.

(5) Airport Management regulation

At the end of 2005, China has 68 general aviation airports and 329 provisional airport, this is divided by 1/500 the number of U.S. airports. Only GBT 17836-1999 "general aviation airport equipment and facilities" provides indicators of general airport, Which provides of the airport for fixed-wing aircraft, helicopters who do general aviation flight operations activities. These airports does not apply to gliders, hot air balloons, airships and flying model aircraft activities.

(6) Personnel management regulation

"Air sports management approach" require " aviation sports drivers must pass through the system of aviation theory and driving skills training, and in accordance with the provisions of personnel licensing system, apply from CAAC for driving Members of license."

In the regulation the LSA player mast apply license from CAAC, but be tested by Sport Commission, actually It's hard to act.

(7) Operation Management regulation

"General operating and flight rules " stipulates that commercial air travel must comply with requirements of the Department of CCAR-91 to get the certification, but LSA operation person or organizations don't need operational certification.

"Aviation sports management approach" declared: "National sports committee unified management the national air sports."

3.2 LSA agencies and staffing in China

In China LSA's operation managed by two departments, they are civil aviation authority and sports council.

CCAR declared: "The State Council department in charge of civil aviation activities in the country in unified supervision and administration." Led by National Civil Aviation Authority, seven regions and 33 of the Civil Aviation Authority regulatory activities in the country.

"Aviation sports management approach" declared: "National sports committee unified management the national air sports." The State Sports Committee and the provinces, autonomous regions and municipalities Sports Committee hierarchical management agencies the safe operation of Light Sport Aircraft.\

4. Conclusions

According to the analysis of the American experience and the situation in China, this paper view of the LSA airworthiness management problems , make the following recommendations.

(1) Improve the supporting of the safety responsibilities and authorities. Non-sports LSA are generally far from the city, so can ready to be transferred. Civil Aviation Authority's management system is now generally in the provincial capital-level cities, can not meet the regulation on the operation of LSA. Non-sports LSA users are generally personal entertainment flights, private flights and training. National Sports Commission's duty is to sports organizations, management and players, coaches, referees management, commitment to society, not suitable for running on the management of LSA.

(2) Implementation of LSA operation supervisory duties. Civil Aviation Authority is responsible for the state private, commercial light sport aircraft, light rotorcraft, airships, balloons, gliders; National Sports Commission is responsible for sports light sport aircraft, light rotorcraft, airships, balloons, gliders, delta wing, powered parachute. there is the blind spot between the Civil Aviation and Sports Commission, and the management of Civil Aviation and Sports Commission fuzzy boundaries.

(3)Propose LSA operation regulations. Regulations and standards lag will cause a serious obstacle to the development of LSA. Industry executives should improve laws and regulations in airworthiness certification, airworthiness maintenance, airworthiness management aspects.

(4) Support the establishment of service system. Fixed base operator(FBO), Flight service station(FSS), Maintenance Station(MS) should be established to support the LSA operation.

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