



ASSEMBLY — 39TH SESSION

TECHNICAL COMMISSION

Agenda Item 36: Aviation safety and air navigation implementation support

**INTRODUCTION TO CHINA'S REGULATIONS AND PROCEDURES FOR
AIRWORTHINESS CERTIFICATION OF AVIATION GASOLINE AND RELATED
PRACTICES**

(Presented by the People's Republic of China)

EXECUTIVE SUMMARY

On March 16, 2000, the Civil Aviation Administration of China (CAAC) set up the Aviation Fuel and Chemicals Certification Center (FCC) in Chengdu. The Center has nearly 40 employees, with the majority of them having a professional background in chemistry. The establishment of the specialized unit has enabled the Aircraft Airworthiness Certification Department (AAD) of CAAC to reinforce its efforts in airworthiness certification of aviation fuel and chemicals. This paper provides an introduction to China's regulations and procedures for airworthiness certification of aviation gasoline and related practices.

In recent years, the Aircraft Airworthiness Certification Department of CAAC has discovered that some aviation gasoline products in the domestic civil aviation market failed to meet the requirements of aircraft engine manufacturers. To ensure aviation safety, the Department developed the Procedures for Certification of Civil Aviation Gasoline and Post-certification Supervision (AP-55-04) based on the Regulations on the Airworthiness Management of Civil Aviation Fuel (CCAR-55), and required the FCC to carry out certifications on aviation gasoline that conformed to the ASTM D910 100LL standard or the ASTM D7547 UL91 standard. Three certified enterprises were awarded the Aviation Fuel Supplier Airworthiness Approval, with all of them getting the permission for ASTM D910 100LL gasoline production and one of them the permission to produce ASTM D7547 UL91 gasoline. At present, the aviation gasoline that conforms to the requirements of aircraft engines and airworthiness requirements could well accommodate China's market demand and is conducive to the safety of general aviation.

<i>Strategic Objectives:</i>	This paper relates to the Safety and Air Navigation Capacity and Efficiency Strategic Objectives.
<i>Financial implications:</i>	
<i>References:</i>	

¹ English and Chinese versions provided by the People's Republic of China.

1. INTRODUCTION

1.1 In 2008, China became the world's second largest civil air transport market. To ensure the production of aviation fuel that meets airworthiness requirements, CAAC has been working to promote the airworthiness certification of aviation fuel and chemicals. On March 16, 2010, CAAC set up the Aviation Fuel and Chemicals Certification Center (FCC) in Chengdu, which specializes in performing airworthiness certifications on aviation fuel and chemicals under the leadership of the Aircraft Airworthiness Certification Department (AAD) of CAAC. The Center has nearly 40 professional technical staff, with the majority of them having a professional background in chemistry. It has carried out inspections on the fuel supply systems of over 200 airports and offered technical support to Macau International Airport in its fuel supply inspections. It has completed airworthiness certifications on aviation biofuels, aviation gasoline, etc., and has gained a wealth of experience in this regard. The Center is a member of ASTM and SAE, and has attended regularly the meetings held by ASTM, SAE and other international associations, to keep the certification standards in China aligned with international standards and thereby to satisfy the requirements of aircraft and engines operated in China.

1.2 Aviation gasoline is a major fuel for general aviation. To improve the quality of aviation gasoline and ensure aviation safety, CAAC has carried out airworthiness certifications on the aviation gasoline and related manufacturers in China in accordance with the Regulations on the Airworthiness Management of Civil Aviation Fuel (CCAR-55), promoting the production of aviation gasoline meeting airworthiness aircraft engine requirements.

2. REGULATIONS, PROCEDURES AND STANDARDS FOR AIRWORTHINESS CERTIFICATION OF AVIATION GASOLINE

2.1 To strengthen airworthiness management of aviation fuel, ensure civil aviation safety and maintain the order of civil aviation activities, in 2005, CAAC published the Regulations on the Airworthiness Management of Civil Aviation Fuel (CCAR-55), and has performed airworthiness certifications on aviation fuel and related suppliers as well as entities responsible for aviation fuel testing starting in 2006 in accordance with the document. Certifications have also been carried out on airports with regard to fuel transportation, filling and other aspects, which ensured the conformance of the fuel supply systems. In 2012, CAAC carried out airworthiness certifications on the design and production of bio-jet fuels, and approved SINOPEC as the first company in China with the capacity to produce bio-jet fuels and issued approval to No.1 Bio-Jet Fuel. In 2014, the Administration launched certifications on the production of aviation gasoline. It is now planning for the certification of aviation kerosene, with the aim to harmonize the standards of different refineries to bring them into consistency with aircraft engine and airworthiness requirements, so as to achieve whole-chain airworthiness management of aviation fuel.

2.2 To ensure the quality of aviation gasoline, promote the use of quality gasoline in general aviation, facilitate the alignment of aviation gasoline produced in China with international standards and gradually promote the production of low lead, ultra-low lead and lead-free gasoline, in 2014, CAAC developed and published the Procedures for Certification of Civil Aviation Gasoline and Post-certification Supervision (AP-55-AA-2014-04) based on the Regulations on the Airworthiness Management of Civil Aviation Fuel (CCAR-55), and has carried out certifications in accordance with the Procedures.

3. RELATED PRACTICES

3.1 From 2014 to 2015, the Aircraft Airworthiness Certification Department of CAAC carried out airworthiness certifications on aviation gasoline using the same methods as adopted for other

aviation products. As with foreign aviation gasoline, CAAC required gasoline products to be sent to Dixie Services, an internationally recognized laboratory, for performance tests. It also performed certifications on the products' ingredients and quality control systems. Samples were taken under the supervision of certification officials on site, and sent to Dixie Laboratory for testing.

3.2 Following the tests and production systems certifications, CAAC granted three enterprises the approval to produce 100 LL aviation gasoline meeting the ASTM D910 standard, and one enterprise the approval to produce UL 91 aviation gasoline meeting the ASTM D7547 standard. The certification results by CAAC won recognition from both Lycoming and Continental Motors, which allowed certified aviation gasoline to be used on their engines.

3.3 The Aircraft Airworthiness Certification Department of CAAC implemented strict post-certification management of certified products in accordance with the airworthiness certification procedures, requiring each batch of products to be sent to the Aviation Fuel and Chemicals Certification Center to be tested on the Aviation Fuel Test Bench (AFTB) and carrying out close supervisions on the products to ensure their conformance to relevant requirements. The equipment and procedures used by the AFTB are the same with Dixie's.

4. **EFFECTIVENESS ASSESSMENT**

CAAC has achieved considerable results in its efforts to carry out airworthiness certifications on aviation gasoline, as evidenced by the following aspects:

4.1 The certifications have propelled Chinese enterprises to produce aviation gasoline that meets airworthiness and aircraft engine requirements, thus improving the quality of aviation gasoline produced in China. The use of aviation gasoline meeting aircraft engine requirements in the domestic market has led to the dramatic drop in the failure rate attributable to fuel quality in general aviation, and has been conducive to environmental protection.

4.2 Approvals were issued to three aviation gasoline manufacturers which could supply qualified aviation gasoline that meets the demand of the Chinese market, providing support for the rapid and healthy development of China's general aviation industry.

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