



Biofuel Certification

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Aviation Fuel & Chemical Airworthiness Certification Centre (FCCC) of CAAC

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Outline





Certification Background

Industry progress

- ❑ The global development of biofuels is based on the following reasons:
 - Limit the impact of aviation greenhouse gas emission, save energy and reduce waste gas emission
 - Looking for alternative energy

- ❑ CAAC have already accepted biofuel airworthiness certification application from Petrochina and Sinopec.

Certification Background

Industry progress

- ❑ In October 2010, CAAC completed the airworthiness review of first biofuel demonstration flight of China.
- ❑ In February 2012, CAAC accepted CBF-1 biofuel airworthiness certification application of Sinopec.





Outline



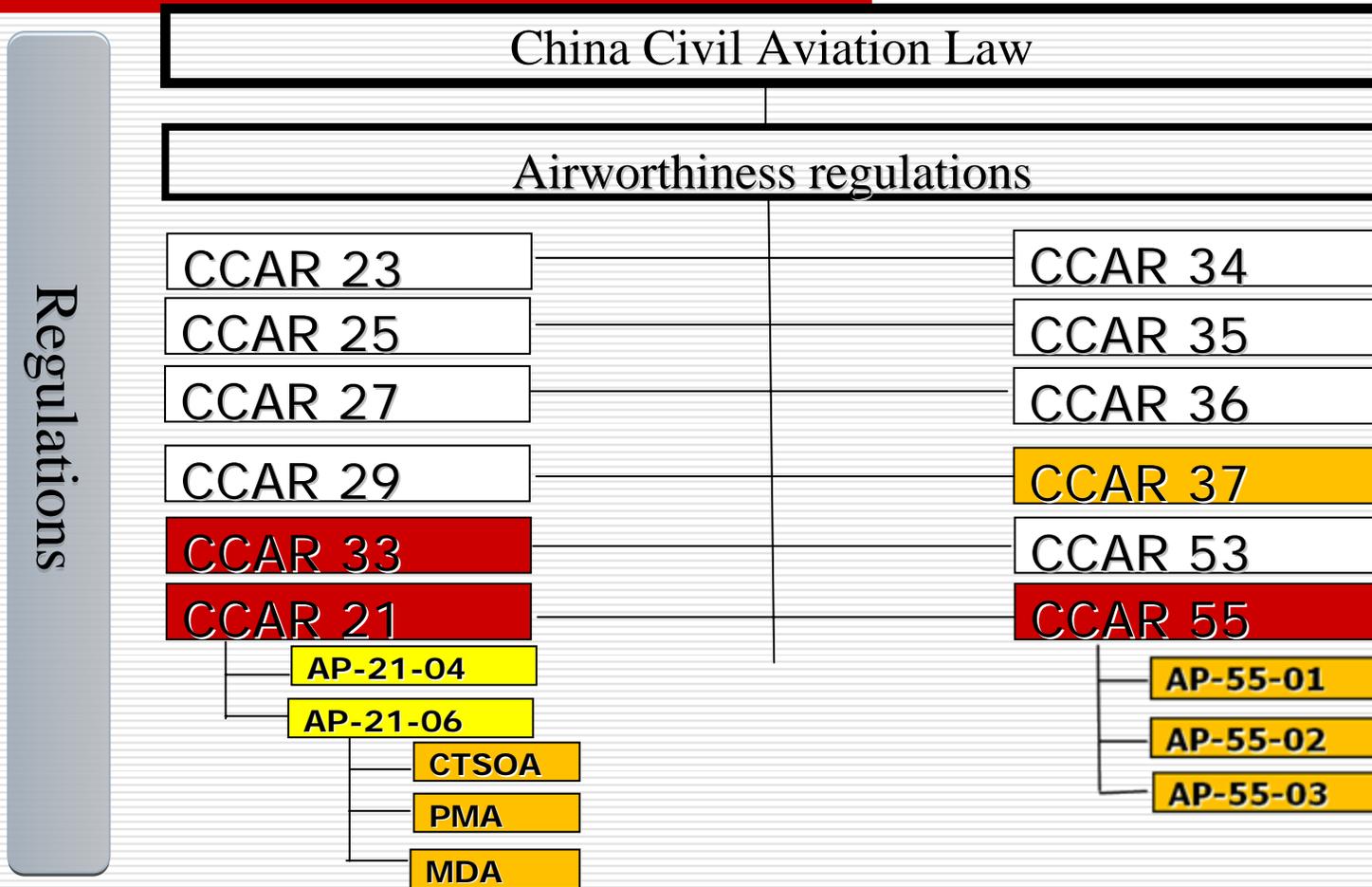


Certification Principle

- ❑ Ensure aviation safety
- ❑ Aviation fuel is the “blood” of the aircraft and is also the most frequently replaced component in the aircraft
- ❑ Considering the biofuel as the most frequently replaced component in the aircraft, CAAC will use CTSOA certification form to validate the compliance of the biofuel
- ❑ The certification includes the certification of biofuel design, production and quality control system



Certification Principle





Certification Principle

Certification agency

- Biofuel airworthiness certification committee
- Committee Members: CAAC, CNAF, SINOPEC, PetroChina, Airlines





Certification Principle

- Primary responsibilities:
 - Determine the certification principle and plan
 - Appoint the certification team members and group leader
 - Supervise the certification team work
 - Arbitrate major problems
 - Decide whether to issue certificate based on the certification results



Certification Principle

□ Biofuel certification team

- The certification team will be organized based on the Aviation Fuel & Chemical Airworthiness Certification Centre (FCCC) of CAAC and be responsible for biofuel airworthiness certification
- Team members:
 - ✓ FCCC, CNAF, Petrochemical experts from universities and research institutions



Certification Principle

Technical standard of certification

- Civil Aviation Jet Fuel Containing Synthesized Hydrocarbons, CTSO-2C701
 - Alternative fuel and its synthetic paraffinic kerosene (SPK) component shall conform to the requirement of ASTM D7566-11a and the supplement in CTSO-2C701
 - The mixture performance of SPK component with No.3 jet fuel shall conform to CTSO-2C701



Certification Principle

Technical standard of certification

□ CTSO-2C701 :

- Regulate the requirement of SPK component production process
- Regulate the test requirement for the compatibility of metal and non-metallic material with alternative fuel
- Regulate the material required for the application and the mark required on the files after approval.



Outline





Certification Procedure

Design Certification and Approval

Production Certification and Approval

Certificate Management



Certification Procedure

Design Certification and Approval

- ❑ Ensure the manufacture process and fuel properties conform to CTSO-2C701
 - Ensure SPK component manufacture process conform to CTSO-2C701
 - Ensure the SPK component properties, mixture ratio, additive, aromatic content and compatibility of metallic and non-metallic material with fuel conform to the CTSO-2C701



Certification Procedure

Production Certification and Approval

- Confirm that the applicant is qualified for the alternative fuel manufacture
- Confirm that the applicant has the facilities and equipment for the production
- Ensure the applicant has the complete supply chain management system and product quality control system to continuously produce biofuels with stable properties conforming to the CTSO-2C701



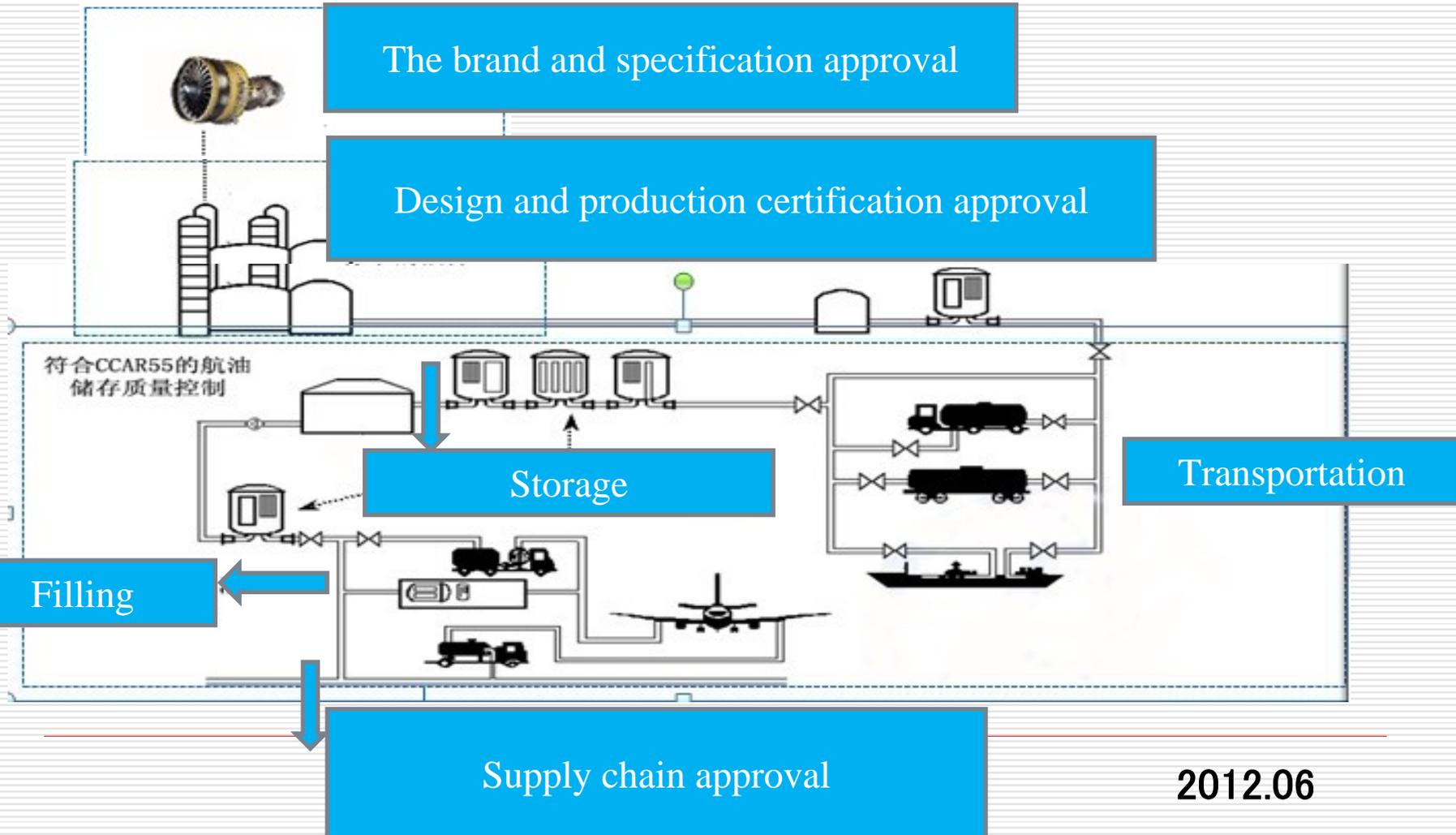
Certification Procedure

Certificate Management

□ Management Rules

- Appoint the inspector and project engineer of the approval holder
- Appoint DER and DMIR to perform routine supervision and inspection to make sure all procedure in accordance with CCAR-183
- Approval holder should be already for regular or irregular supervision and inspection by airworthiness authorities, engineering proxies and manufacturing inspection representatives

Certification Procedure





Thanks