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Committee on Aviation Safety
Topic 1

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[1] This paper reflects the author's personal views and cannot be considered as the views of ICAO.

SOCIÉTÉ QUÉBÉCOISE DE DROIT INTERNATIONAL

ADDRESSING THE THREAT OF COUNTERFEIT AIRCRAFT PARTS

Since September 2023, an alarming large number of airlines found counterfeit and uncertified parts in the aircraft they are operating, mainly used in one critical component of said aircraft: the engines. The preliminary investigations revealed that these parts were supplied by AOG Technics, a UK-based firm founded in 2015 which:

> "has supplied parts for passenger aircraft engines around the world. These are mostly sold to overseas companies that install airline parts, as well as some UK airlines, maintenance providers and other parts suppliers."[2]

On the 4th of August 2023, the European Union Aviation Safety Agency (EASA) had already published a notice following several occurrence reports that revealed that several CFM56 engine parts distributed by AOG Technics have been supplied with certificates and recommended that:

> "Aircraft owners, operators, maintenance organisations, and distributors are requested to inspect their records to determine whether aircraft or engine parts have been obtained from AOG Technics, either directly or indirectly. For each part obtained, please contact the approved organization identified on the ARC (e.g. FAA 8130-3 or EASA Form 1) to verify the origin of the certificate.
>
> If the approved organization attests that the ARC did not originate from their organization, then any affected parts should be quarantined to prevent installation until a determination can be made regarding their eligibility for installation. If a part with a falsified ARC is already installed, then it is recommended that the part be replaced with an approved part."[3]

The US Federal Aviation Administration (FAA) adopted a similar action on the 21st of September 2023 and encouraged:

> "aircraft owners, operators, manufacturers, maintenance organizations, parts suppliers, and distributors to inspect their GE Model CF6 engines and/or aircraft parts inventories for the referenced FAA Aviation Safety bushing part number sold by AOG Technics LTD to TAP Maintenance & Engineering. If these bushings are installed or found in existing aircraft parts inventories, the FAA recommends that they be removed and quarantined to

[2] UK Serious Fraud Office, "AOG Technics Ltd", at https://www.sfo.gov.uk/cases/aog-technics-ltd/.
[3] EASA, "Aircraft Parts Distributed by AOG Technics - Suspected Unapproved Parts Details", OC-EASA-2023004901

prevent installation until a determination can be made regarding their eligibility for installation."[4]

This large-scale fraud revealed a major weakness of the aviation safety system, that relies primarily on the certification of aircraft, parts and engines as well as entities involved in manufacturing, maintenance or training, while the increasing internationalization of the manufacturing process and the growing number of new entrants on the market can make it difficult to track the origin of parts installed in certified aircraft. Furthermore, technological innovation being at the heart of air transport, a right balance must be found between, on the one hand, control of these new entrants and, on the other hand, the necessary flexibility in order to attract new investors.

Main Provisions of the Chicago Convention and the Relevant Annexes

The main provisions of the 1944 Chicago Convention relating to aviation safety are the following:

- **Article 29 – Documents carried in aircraft**
  "Every aircraft of a contracting State, engaged in international navigation, shall carry the following documents in conformity with the conditions prescribed in this Convention:
  (a) Its certificate of registration;
  (b) Its certificate of airworthiness; […]".

- **Article 31 – Certificates of airworthiness**
  "Every aircraft engaged in international navigation shall be provided with a certificate of airworthiness issued or rendered valid by the State in which it is registered."

- **Article 33 – Recognition of certificates and licenses**
  "Certificates of airworthiness and certificates of competency and licenses issued or rendered valid by the contracting State in which the aircraft is registered, shall be recognized as valid by the other contracting States, provided that the requirements under which such certificates or licenses were issued or rendered valid are equal to or above the minimum standards which may be established from time to time pursuant to this Convention."

- **Article 37 – Adoption of international standards and procedures:**
  "Each contracting State undertakes to collaborate in securing the highest practicable degree of uniformity in regulations, standards, procedures, and organization in relation to aircraft, personnel, airways and auxiliary services in all matters in which such uniformity will facilitate and improve air navigation.
  To this end the International Civil Aviation Organization shall adopt and amend from time to time, as may be necessary, international standards and recommended practices and procedures dealing with: […] (e) Airworthiness of aircraft."

[4] FAA, "Unapproved Parts Notification", 2023- AAE-EHL-20230801-713.

- **Article 44 – Objectives**

  "The aims and objectives of the Organization are to develop the principles and techniques of international air navigation and to foster the planning and development of international air transport so as to: […]

  (h) Promote safety of flight in international air navigation

  (i) Promote generally the development of all aspects of international civil aeronautics."

The main provisions of the Annexes to the 1944 Chicago Convention relating to aviation safety are the following:

- **Annex 8 – Airworthiness of Aircraft, Part II, Chapter I, Standard 1.4 – Issuance of Type Certificate**

  "1.4.1 The State of Design, upon receipt of satisfactory evidence that the aircraft, engine or propeller type if certificated separately is in compliance with the design aspects of the appropriate airworthiness requirements, shall issue a Type Certificate to define the type design and to signify its approval of the design of the aircraft type.

  1.4.2 When a Contracting State, other than the State of Design, issues a Type Certificate for an aircraft, engine or propeller type, it shall do so on the basis of satisfactory evidence that the aircraft, engine or propeller type is in compliance with the design aspects of the appropriate airworthiness requirements.

- **Annex 8 – Airworthiness of Aircraft, Part II, Chapter II, Standard 2.3 – Aircraft parts production**

  "2.3 The Contracting State taking responsibility for the production of aircraft parts manufactured under the design approval referred to in 1.3.5 of this part shall ensure that the aircraft parts are airworthy."

- **Annex 8 – Airworthiness of Aircraft, Part II, Chapter II, Standard 2.4 – Production Approval**

  "2.4.1 When approving production of an aircraft, engine, propeller or associated part, the Contracting State having jurisdiction over the organization responsible for production shall:

  a) examine the supporting data and inspect the production facilities and processes so as to determine that the manufacturing organization is in compliance with the appropriate production requirements; and

  b) ensure that the manufacturing organization has established and can maintain a quality system or a production inspection system such as to guarantee that each aircraft, engine, propeller or associated part produced by the organization or by sub-contractors and/or suppliers is airworthy at the time of release."

- **Annex 8 – Airworthiness of Aircraft, Part II, Chapter III, Standard 3.1 – Eligibility, issuance and continued validity of a Certificate of Airworthiness**

  "3.2.1 A Certificate of Airworthiness shall be issued by a Contracting State on the basis of satisfactory evidence that the aircraft complies with the design aspects of the appropriate airworthiness requirements."

Overview of the Certification Requirements

In order to ensure the safety of aircraft, different types of certificates are required: Type Certificates (TC), that demonstrate that the category of aircraft is airworthy, and an individual Certificate of Airworthiness for each aircraft operated, which demonstrates that said aircraft complies with the TC. Engines, propellers and associated parts must also receive a TC and a CofA. Type certificates play a key role when it comes to ensuring high levels of safety, as they demonstrate that the type of product is airworthy, *i.e.* capable of meeting the requirements and operate safelyAn intricate system has been established by Annex 8, in which the State of Registry must inform the State of Design of any significant issue encountered regarding a particular type of aircraft, the latter being obliged, in turn, to share with all other States of Registry mandatory continuing airworthiness information, through airworthiness directives notably. The sharing of information is both top-down and bottom-up and thus thrives on cooperation.

In both the US and Europe, the certification process of aircraft is driven by a philosophy of cooperation between the manufacturer and the regulator. This derives from the high level of technical knowledge required to design an aircraft. On overall, the type certification procedure in Europe maintains a lot of similarities with the US one, which should not be surprising as the vast majority of the world took inspiration in the US model throughout the second half of the 20th century. This applies, as well, to the certification of entities involved in aircraft manufacturing and maintenance and their so-called “privileges”.

The holders of a European Production Organisation Approval (POA) enjoy equivalent privileges to the ones attached to the Production Certificates issued by the FAA. The same goes for European Maintenance Organisation Approvals (MOA) and US Repair Station Certification, or European Maintenance Training Organisation Approval (MTOA) and US Aviation Maintenance Technical School (AMTS) Certification.

The Annexes to the 1944 Chicago Convention require the Contracting States to ensure that the aircraft mainframe, parts and engines satisfy the safety requirements and hold valid certificates. However, the threat of counterfeit parts is not directly addressed, and the abovementioned organization approvals are not regulated at international level, leaving the question of the oversight of design and production organizations to national or, in the European case, regional rules.

Non-exhaustive list of potential questions to be addressed by the delegates:

Given the fact that aviation safety relies on a philosophy of control of the aircraft and different aeronautical parts and engines, but is also built on a spirit of cooperation and trust with the aircraft manufacturers (who have in turn to control their sub-contractors), the presence of fake parts creates a significant threat to the existing aviation safety system. The internationalization of the industry causes furthermore additional problems when it comes to tracing the origin and destination of these parts.

Hence, ICAO has to pay due attention to several considerations:

1. How to strengthen the international mechanisms to avoid that a similar problem happens in the future;
2. The possibility to establish an international register of approved manufacturers and contractors;
3. The issue of sanctions of Contracting States for not ensuring a proper oversight;
4. In close cooperation with manufacturers and maintenance organizations, how to regulate better sub-contractors and brokers;
5. How to integrate, and control, new actors in the aeronautical sector, such as start-ups or investors coming from other industries.