WORKING PAPER

INTERNATIONAL CIVIL AVIATION ORGANIZATION

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ASSEMBLY — 35TH SESSION

TECHNICAL COMMISSION

Agenda Item 25: A global design code for aircraft

EXPANSION OF CHAPTERS 4, 5 AND 6 OF ANNEX 8 IN ORDER TO ESTABLISH A GLOBALLY HARMONIZED DESIGN AND CONSTRUCTION CODE BY TAKING INTO CONSIDERATION THE INTERNATIONAL DESIGN AND CONSTRUCTION STANDARDS

(Presented by Iran (Islamic Republic of))

SUMMARY

This working paper emphasizes the importance of the establishment of a globally harmonized design and construction code as initiated by the Federal Aviation Administration (FAA) (United States), the Joint Aviation Authorities (JAA) Europe and the Interstate Aviation Committee (IAC) (Russian Federation).

Enlargement of Annex 8 — *Airworthiness of Aircraft* in the areas of Design and Construction to include minimum and maximum design values, entails that the details of design and construction shall be such as to give reasonable assurance that all airplane parts will function effectively and reliably in the anticipated operating conditions.

1. INTRODUCTION

1.1 Whereas the implementation of Assembly Resolution A33-11 requires future action by all States of design and other Contracting States to participate in the international harmonization projects on a global design code for aircraft, as initiated by Federal Aviation Regulation, "FAR" and Joint Aviation Regulation, "JAR" and also by the Interstate Aviation Committee of Russian Federation, namely "AP", thus the expansion of Chapters 4 — *Design and Construction*, 5 — *Engines* and 6 — *Propellers* of Annex 8, Part IIIA and the corresponding chapters of Annex 8, Part IIIB and Part IV to establish a Globally Harmonized Aircraft Design and Construction Code is required.

1.2 To include minimum and maximum design values in ICAO Standards in the form of an ICAO document will give reasonable assurance that all aircraft parts, assemblies and systems will function effectively and reliably in the anticipated operating conditions to assure a safe flight.

2. DISCUSSION

2.1 A balanced approach to the issue, provides the most effective means of improvement of the safety factors of flights in regard to the performance and the airworthiness of aircraft by a thorough investigation into the outcomes of past aircraft incidents and accidents. Efforts are also made in order to determine the effectiveness of the international design and construction standards as a Global Aircraft Design Code.

2.2 With the growing interest in the Quality Standards in Aviation Industry, Quality Assurance, and Quality Control System, details of design and construction and related values, data, characteristics and processes, a static and dynamic substantiating tests as well as on flight tests shall comply with the Standards and Requirements of "FAR", "JAR", or "AP". The requirements and standards of other Civil Aviation Airworthiness are quite similar to those of FAR and JAR.

2.3 Aircraft design features have a significant role in enabling the flight crew to maintain the control of aircraft. The design features comprise: Controls and Control Systems, System survivability, Crew environment, Pilot vision, Provisions for emergencies, Fire Precautions, Fire Suppression, Incapacitation of occupants and Protection of the flight crew compartment from smoke and fumes. The abovementioned items require their own means, provisions, arrangements, restrictions and standards. All materials and components used in an airplane, which are essential for the safe operation, shall conform to the approved specifications. The methods of fabrication and assembly should be as such that the airplane structure is protected against deterioration or loss of strength in service**,** and be reliable with respect to the maintenance. In the design of airplane emergency-landing provisions shall be made. For the rapid evacuation of the airplane in emergency conditions, the interior layout of the cabin and the position and number of emergency exits, including illumination of the escape paths and exits, special facilities shall be provided. Finally, provision shall be made in the design for ditching.

2.4 To fulfill all of the above issues in a proper and efficient manner and to achieve a safe and sound flight, joint efforts of major States of Design and construction is necessary to establish a globally harmonized design code, type and production certification process.

3. ACTION BY THE ASSEMBLY

3.1 The Assembly is invited to:

a) incorporate the views expressed in this paper in Assembly Resolution A33-11;

b) note that efforts have been made by the States of design and other Contracting States in the field of "A Global Design Code for Aircraft" taking into account, the guidelines and principles provided by the Assembly Resolution A 33-11;

c) recognize the urgent need for an internationally coordinated approach to as well as ICAO participation in the harmonization process; and

d) consider the establishment of a Working Group to give consideration to the development and compiling of guidance material, Global Design Features, Data, Maximum and Minimum values, Substantiating Tests Demonstration, Material Specifications, Fabrication Methods and Processes, etc. by creating a Design and

Construction Manual in the form of an ICAO document in order to cover the aforesaid issues and also the enlargement of Annex 8.

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