International Civil Aviation Organization

WORKING PAPER

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ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITEE

Agenda Item 15: Environmental Protection – General provisions, Aircraft Noise and Local Air Quality

COORDINATION OF THE ICAO ENVIRONMENTAL AND AIRWORTHINESS STANDARDS UNDER PREPARATION FOR THE NEW GENERATION OF SUPERSONIC PASSENGER AIRCRAFT

(Presented by the Russian Federation)

EXECUTIVE SUMMARY

One of the principal objectives of the International Civil Aviation Organization (ICAO) is the timely development of international Standards for all types of civil aviation aircraft; in particular, the new generation of supersonic transport (SST).

The world is facing a challenge related to the creation of promising, environmentally acceptable and cost-effective SST. Several companies have already made significant progress in the development of commercial supersonic aircraft, and it is estimated that these could be ready for certification as early as 2030–2035.

The Russian Federation is actively involved in comprehensive research into the new generation of SST and their propulsion systems.

Right now, individual subgroups and ICAO groups are working hard on SST problems, endeavouring to ensure the timely development of international standards for these aircraft. The lack, however, of any clear and continuous coordination of the process of developing ICAO Environmental Standards and Airworthiness Standards for SST is significantly hindering the harmonization of these Standards and diminishing confidence in their effective application.

Action: The Assembly is invited to:

a) exclude, in the light of the outcome of the consideration by the ICAO Air Navigation Commission (ANC) of the draft of a new ICAO Standard on SST noise, any mention in the draft of variable noise reduction systems (VNRS), owing to the absence of any consideration of safety issues, and to postpone further coordination of this draft pending further study of the relationship between flight safety issues, airworthiness standards and the level of possible restrictions for noise received on the ground for SST.

b) instruct the ICAO Council, in view of the need for close and effective coordination of the activities of the various expert groups of the Air Navigation Commission (ANC) and the Committee on Aviation Environmental Protection (CAEP), to consider the possibility of establishing an ICAO coordination group, including with the participation of experts from the ANC and CAEP working groups, with a view to reaching prompt and effective agreement on problems related to the development of ICAO Standards and Recommended Practices for SST, including airworthiness and environmental standards; and

[1] Russian version provided by the Russian Federation.

c) bear in mind that the Russian Federation, drawing on its rich experience of building first-generation SSTs and the results of subsequent research into promising new-generation SST, stands ready to play an active role in this important area of ICAO work.	
Strategic Goals:	This working paper relates to the Strategic Goals – *Aviation is Environmentally Sustainable*, *Every Flight is Safe and Secure* and *The Economic Development of Air Transport Assures the Delivery of Economic Prosperity and Societal Well-Being for All.*
Financial implications	This will not require additional financial resources.
References:	AN-Conf/13-WP/161, *Views of the United States on Civil Supersonic Flight* CAEP Terms of reference, available at https://www.icao.int/environmental-protection/Pages/Caep.aspx.https://www.icao.int/environmental-protection/Pages/Caep.aspx Resolution A39-1, *Consolidated statement of continuing ICAO policies and practices related to environmental protection – Climate change. General provisions, noise and local air quality*, Appendix G – *Supersonic aircraft –The problem of sonic boom*. Annex 6 – *Operation of Aircraft*, Part I, *International Commercial Air Transport – Aeroplanes*, 12th edition, 2022 Annex 16 – *Environmental Protection*, Volume I – *Aircraft Noise* Air Navigation Commission, 229th Session, Minutes of the Fifth Meeting, 15 May 2025

1. INTRODUCTION

1.1 The first flight of the Soviet Tu-144 supersonic passenger aeroplane took place on 31 December 1968. Three months later, the British-French airliner Concorde took off into the sky. They led the way to supersonic passenger transport. At that time, the development of these aeroplanes was a genuine technological breakthrough.

1.2 The world is now facing a new challenge related to the creation of promising, safe, environmentally acceptable and cost-effective SST. To date, several companies have made significant advances in developing commercial supersonic aeroplanes and they intend to put these into operation from 2030.

1.3 One of the principal objectives of ICAO is the timely development of international Standards for all types of civil aviation aircraft; in particular, SST. In the 1960s, ICAO had a special committee for SST and, in the 1970s, it had a technical committee on operational problems of SST. These effectively coordinated the work of various ICAO expert groups to develop requirements for SST, including problems relating to flight safety, the environment and operations.

1.4 At present, a number of ICAO groups and subgroups are giving close attention to the problems of SST, aimed at the timely development and proper harmonization of international Standards for such aircraft on such matters as airworthiness, noise received on the ground, sonic boom, engine emissions in the airport area, CO_2 emissions and others.

1.5 At recent ANC conferences and other ICAO meetings, the need to develop airworthiness standards for SST has already been underlined.

1.6 According to the current 2019 CAEP terms of reference, the development of CAEP environmental standards should take into account the potential interdependence of measures taken to reduce engine noise and harmful emissions. This requirement primarily responded to the growing interdependence of environmental constraints due to their systematic tightening. These interdependencies are especially evident in the requirements that have been developed for advanced SST.

2. DISCUSSION

2.1 The critical need to take due account of the interdependence of restrictions on noise received on the ground, emissions and engine emissions for subsonic aircraft has already been clearly manifested in the very fact of the development and adoption by ICAO of the draft of the first double Standard on the simultaneous tightening of noise restrictions and CO_2 emissions (Chapter 16 of Volume I of Annex 16).

2.2 To ensure that fuller account is taken of all the interrelations between environmental constraints for SST, CAEP proposed the creation of a special coordination group, which currently provides the necessary coordination of the CAEP working groups in the process of developing environmental standards for SST.

2.3 In practice, the development of environmental standards for SST also necessitates close coordination with issues relating to the unconditional guarantee of safety and with airworthiness standards, which have not yet been developed, and which lie outside the purview of CAEP. From time to time there are occasional contacts between the relevant groups of CAEP and ANC, but these are totally inadequate. This is evidenced in particular by the recent conclusions of the discussion by ANC of the new draft CAEP standards on ground noise for SST (Chapter 15 of Volume I of Annex 16 “Environmental Protection” to the Convention on International Civil Aviation). Following these conclusions, given that there had been no elaboration of the issue of ensuring the necessary level of flight safety when using the VNRS device, it was recommended that there be no mention of this device in the new draft amendments to the noise standards for both SST and subsonic passenger aircraft.

2.4 The conclusions of the ANC discussion understandably raise the question as to whether the available data are sufficiently up-to-date and comprehensive for the Assembly to adopt the draft new standards as a whole, as many aspects of the draft are directly related to the feasibility (or limited use) of VNRS. In particular, as shown by the results of studies of the possibilities of achieving the noise standards currently in force for subsonic aircraft, reliance is placed on use of the VNRS system, which is programmed to reduce engine thrust during take-off and landing. As yet, no data have been presented on the possibility of achieving the proposed SST noise limits without the use of VNRS and the feasibility of future SST achieving the noise standards currently in force for subsonic aircraft needs to be further demonstrated and confirmed.

2.5 Closer coordination between the developers of environmental and airworthiness standards for SST is required not only in the development of a certification procedure for noise, taking due account of flight safety restrictions, but also in tackling problems related to such issues as reduction of the sonic boom of SST, engine failure at high cruising altitudes, and others. Accordingly, in order to expedite and optimize the development of new ICAO standards for SST, which are essential for the provision of the regulatory certainty needed by the industry, it would make sense to establish a new coordination group for the practical discussion and coordination of joint work on the development of standards and recommended practices for SST.

3. CONCLUSION

3.1 The Russian Federation supports the decision by CAEP to set up a coordination group within CAEP to coordinate work by the CAEP working groups to develop standards for SST.

3.2 In the light of the conclusion reached by ANC in its consideration of a draft new ICAO standard on noise for SST that no reference should be made to the use of the VNRS system for SST since flight safety issues had not been examined, the Russian Federation proposes that the Assembly postpone further work on the harmonization of new noise standards for SST pending further study of the relationship between airworthiness standards for SST and the possible restriction of noise received on the ground from such aircraft.

3.3 The Russian Federation proposes the establishment of a coordination group for the development of ICAO standards for SST. This will speed up the development of ICAO SARPs for SST, by ensuring that due consideration is given to all interactions between safety, flight specifications and environmental factors, and will boost the effectiveness of cooperation among different ICAO experts in the area of SST flight management.

3.4 Drawing on its rich experience of building first-generation SST and the findings of subsequent research into promising new-generation SST, the Russian Federation stands ready to play an active role in this important area of ICAO work.

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